How To Use This Soil Survey

General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section General Soil Map Units for a general description of the soils in your area.

Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the Index to Map Sheets, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the Index to Map Units (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.

The Summary of Tables shows which table has data on a specific land use for each detailed soil map unit. See Contents for sections of this publication that may address your specific needs.
This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1984. Soil names and descriptions were approved in 1985. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1984. This survey was made cooperatively by the Soil Conservation Service; the United States Department of the Interior, Bureau of Land Management; and the University of Nevada, Agricultural Experiment Station. It is part of the technical assistance furnished to the Lander County Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting solis that could have been shown at a larger scale.

All programs and services of the Soil Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Cover: Typical sequence of landforms in the survey area near Mount Callaghan in the Tolyabe Range, north of Austin. Grassval and Oxcorel soils are on fan piedmont remnants in the foreground; Allor, Wieland, and Zaidy soils are on fan piedmont remnants in the center; Atella, Hymas, and Xine soils are on the forested hills at the left; and Bucen, Robson, Softscreabble, Walti, and Zoesta soils are on mountains in the background.
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index to map units</td>
<td>vi</td>
</tr>
<tr>
<td>Summary of tables</td>
<td>x</td>
</tr>
<tr>
<td>Foreword</td>
<td>xi</td>
</tr>
<tr>
<td>General nature of the survey area</td>
<td>1</td>
</tr>
<tr>
<td>How this survey was made</td>
<td>3</td>
</tr>
<tr>
<td>Soil landscapes</td>
<td>5</td>
</tr>
<tr>
<td><strong>General soil map units</strong></td>
<td>11</td>
</tr>
<tr>
<td>Map unit descriptions</td>
<td>11</td>
</tr>
<tr>
<td>Broad land use considerations</td>
<td>21</td>
</tr>
<tr>
<td><strong>Detailed soil map units</strong></td>
<td>23</td>
</tr>
<tr>
<td>Map unit descriptions</td>
<td>25</td>
</tr>
<tr>
<td>Prime farmland</td>
<td>607</td>
</tr>
<tr>
<td><strong>Use and management of the soils</strong></td>
<td>609</td>
</tr>
<tr>
<td>Crops and pasture</td>
<td>609</td>
</tr>
<tr>
<td>Rangeland</td>
<td>611</td>
</tr>
<tr>
<td>Woodland understory vegetation</td>
<td>613</td>
</tr>
<tr>
<td>Windbreaks and environmental plantings</td>
<td>613</td>
</tr>
<tr>
<td>Wildlife habitat</td>
<td>613</td>
</tr>
<tr>
<td>Engineering</td>
<td>614</td>
</tr>
<tr>
<td><strong>Soil properties</strong></td>
<td>619</td>
</tr>
<tr>
<td>Engineering index properties</td>
<td>619</td>
</tr>
<tr>
<td>Physical and chemical properties</td>
<td>620</td>
</tr>
<tr>
<td>Soil and water features</td>
<td>621</td>
</tr>
<tr>
<td><strong>Classification of the soils</strong></td>
<td>623</td>
</tr>
<tr>
<td>Taxonomic units and their morphology</td>
<td>623</td>
</tr>
<tr>
<td>Akerue series</td>
<td>624</td>
</tr>
<tr>
<td>Allor series</td>
<td>624</td>
</tr>
<tr>
<td>Atlow series</td>
<td>625</td>
</tr>
<tr>
<td>Atella series</td>
<td>626</td>
</tr>
<tr>
<td>Barrier series</td>
<td>627</td>
</tr>
<tr>
<td>Batan series</td>
<td>628</td>
</tr>
<tr>
<td>Belate series</td>
<td>629</td>
</tr>
<tr>
<td>Belted series</td>
<td>630</td>
</tr>
<tr>
<td>Beoska series</td>
<td>631</td>
</tr>
<tr>
<td>Blackhawk series</td>
<td>632</td>
</tr>
<tr>
<td>Broyles series</td>
<td>633</td>
</tr>
<tr>
<td>Bubus series</td>
<td>635</td>
</tr>
<tr>
<td>Bucan series</td>
<td>636</td>
</tr>
<tr>
<td>Buffaran series</td>
<td>637</td>
</tr>
<tr>
<td>Burrita series</td>
<td>638</td>
</tr>
<tr>
<td>Caniwe series</td>
<td>638</td>
</tr>
<tr>
<td>Caphor series</td>
<td>639</td>
</tr>
<tr>
<td>Chad series</td>
<td>640</td>
</tr>
<tr>
<td>Chekedhap series</td>
<td>641</td>
</tr>
<tr>
<td>Chiara series</td>
<td>642</td>
</tr>
<tr>
<td>Clanalpine series</td>
<td>643</td>
</tr>
<tr>
<td>Cleavage series</td>
<td>644</td>
</tr>
<tr>
<td>Colbar series</td>
<td>645</td>
</tr>
<tr>
<td>Cozur series</td>
<td>646</td>
</tr>
<tr>
<td>Creemon series</td>
<td>646</td>
</tr>
<tr>
<td>Cren series</td>
<td>648</td>
</tr>
<tr>
<td>Davey series</td>
<td>649</td>
</tr>
<tr>
<td>Decram series</td>
<td>650</td>
</tr>
<tr>
<td>Defler series</td>
<td>651</td>
</tr>
<tr>
<td>Desatoya series</td>
<td>652</td>
</tr>
<tr>
<td>Desatoya Variant</td>
<td>653</td>
</tr>
<tr>
<td>Dewar series</td>
<td>654</td>
</tr>
<tr>
<td>Duco series</td>
<td>655</td>
</tr>
<tr>
<td>Eastwell series</td>
<td>656</td>
</tr>
<tr>
<td>Enko series</td>
<td>657</td>
</tr>
<tr>
<td>Fenster series</td>
<td>658</td>
</tr>
<tr>
<td>Filiran series</td>
<td>659</td>
</tr>
<tr>
<td>Fortank series</td>
<td>660</td>
</tr>
<tr>
<td>Gando series</td>
<td>661</td>
</tr>
<tr>
<td>Genaw series</td>
<td>662</td>
</tr>
<tr>
<td>Glean series</td>
<td>663</td>
</tr>
<tr>
<td>Glyphs series</td>
<td>664</td>
</tr>
<tr>
<td>Granzan series</td>
<td>665</td>
</tr>
<tr>
<td>Grassval series</td>
<td>666</td>
</tr>
<tr>
<td>Grina series</td>
<td>666</td>
</tr>
<tr>
<td>Gund series</td>
<td>667</td>
</tr>
<tr>
<td>Hackwood series</td>
<td>668</td>
</tr>
<tr>
<td>Halacan series</td>
<td>669</td>
</tr>
<tr>
<td>Handy series</td>
<td>670</td>
</tr>
<tr>
<td>Hapgood series</td>
<td>671</td>
</tr>
<tr>
<td>Hatur series</td>
<td>672</td>
</tr>
<tr>
<td>Hessing series</td>
<td>673</td>
</tr>
<tr>
<td>Hooplite series</td>
<td>674</td>
</tr>
<tr>
<td>Hopeka series</td>
<td>675</td>
</tr>
<tr>
<td>Hymas series</td>
<td>676</td>
</tr>
<tr>
<td>Isolde series</td>
<td>676</td>
</tr>
<tr>
<td>Itca series</td>
<td>677</td>
</tr>
<tr>
<td>Series</td>
<td>Page</td>
</tr>
<tr>
<td>---------------------</td>
<td>------</td>
</tr>
<tr>
<td>Itca Variant</td>
<td>678</td>
</tr>
<tr>
<td>Izo series</td>
<td>679</td>
</tr>
<tr>
<td>Izod series</td>
<td>680</td>
</tr>
<tr>
<td>Jesse Camp series</td>
<td>680</td>
</tr>
<tr>
<td>Jung series</td>
<td>681</td>
</tr>
<tr>
<td>Kawich series</td>
<td>682</td>
</tr>
<tr>
<td>Kelk series</td>
<td>683</td>
</tr>
<tr>
<td>Kingingham series</td>
<td>684</td>
</tr>
<tr>
<td>Kobeh series</td>
<td>685</td>
</tr>
<tr>
<td>Koyen series</td>
<td>686</td>
</tr>
<tr>
<td>Koynik series</td>
<td>687</td>
</tr>
<tr>
<td>Kram series</td>
<td>688</td>
</tr>
<tr>
<td>Labshaft series</td>
<td>688</td>
</tr>
<tr>
<td>Laped series</td>
<td>689</td>
</tr>
<tr>
<td>Laxal series</td>
<td>690</td>
</tr>
<tr>
<td>Layview series</td>
<td>691</td>
</tr>
<tr>
<td>Locane series</td>
<td>692</td>
</tr>
<tr>
<td>Loncan series</td>
<td>693</td>
</tr>
<tr>
<td>Lopwash series</td>
<td>694</td>
</tr>
<tr>
<td>McConnel series</td>
<td>694</td>
</tr>
<tr>
<td>McVegas series</td>
<td>695</td>
</tr>
<tr>
<td>Minat series</td>
<td>696</td>
</tr>
<tr>
<td>Misad series</td>
<td>697</td>
</tr>
<tr>
<td>Muni series</td>
<td>699</td>
</tr>
<tr>
<td>Needle Peak series</td>
<td>700</td>
</tr>
<tr>
<td>Newlands series</td>
<td>701</td>
</tr>
<tr>
<td>Newpass series</td>
<td>701</td>
</tr>
<tr>
<td>Ninemile series</td>
<td>702</td>
</tr>
<tr>
<td>Nobuck series</td>
<td>703</td>
</tr>
<tr>
<td>Novacan series</td>
<td>705</td>
</tr>
<tr>
<td>Ocala series</td>
<td>706</td>
</tr>
<tr>
<td>Old Camp series</td>
<td>707</td>
</tr>
<tr>
<td>Orovada series</td>
<td>708</td>
</tr>
<tr>
<td>Osoll series</td>
<td>709</td>
</tr>
<tr>
<td>Oxcordel series</td>
<td>710</td>
</tr>
<tr>
<td>Packer series</td>
<td>711</td>
</tr>
<tr>
<td>Paranat series</td>
<td>712</td>
</tr>
<tr>
<td>Perlor series</td>
<td>713</td>
</tr>
<tr>
<td>Pineval series</td>
<td>714</td>
</tr>
<tr>
<td>Poorcald series</td>
<td>715</td>
</tr>
<tr>
<td>Puett series</td>
<td>716</td>
</tr>
<tr>
<td>Pula series</td>
<td>716</td>
</tr>
<tr>
<td>Punchbowl series</td>
<td>717</td>
</tr>
<tr>
<td>Rasille series</td>
<td>718</td>
</tr>
<tr>
<td>Ravenswood series</td>
<td>719</td>
</tr>
<tr>
<td>Relley series</td>
<td>720</td>
</tr>
<tr>
<td>Reluctan series</td>
<td>721</td>
</tr>
<tr>
<td>Ricert series</td>
<td>722</td>
</tr>
<tr>
<td>Robson series</td>
<td>723</td>
</tr>
<tr>
<td>Roca series</td>
<td>724</td>
</tr>
<tr>
<td>Rotinom series</td>
<td>725</td>
</tr>
<tr>
<td>Rutab series</td>
<td>726</td>
</tr>
<tr>
<td>Settlemeyer series</td>
<td>727</td>
</tr>
<tr>
<td>Shagnasty series</td>
<td>728</td>
</tr>
<tr>
<td>Shipley series</td>
<td>729</td>
</tr>
<tr>
<td>Silverado series</td>
<td>730</td>
</tr>
<tr>
<td>Simpark series</td>
<td>731</td>
</tr>
<tr>
<td>Skullwak series</td>
<td>732</td>
</tr>
<tr>
<td>Sodhouse series</td>
<td>733</td>
</tr>
<tr>
<td>Softscrabble series</td>
<td>734</td>
</tr>
<tr>
<td>Sonoma series</td>
<td>735</td>
</tr>
<tr>
<td>Spasprey series</td>
<td>736</td>
</tr>
<tr>
<td>Spike series</td>
<td>737</td>
</tr>
<tr>
<td>Stampede series</td>
<td>739</td>
</tr>
<tr>
<td>Stingdorn series</td>
<td>739</td>
</tr>
<tr>
<td>Sumine series</td>
<td>740</td>
</tr>
<tr>
<td>Sundown series</td>
<td>741</td>
</tr>
<tr>
<td>Teguro series</td>
<td>742</td>
</tr>
<tr>
<td>Tenabo series</td>
<td>743</td>
</tr>
<tr>
<td>Tessfive series</td>
<td>744</td>
</tr>
<tr>
<td>Tomel series</td>
<td>745</td>
</tr>
<tr>
<td>Torripsammentic Haploxerolls</td>
<td>746</td>
</tr>
<tr>
<td>Torro series</td>
<td>747</td>
</tr>
<tr>
<td>Trunk series</td>
<td>748</td>
</tr>
<tr>
<td>Tulase series</td>
<td>749</td>
</tr>
<tr>
<td>Typic Argixerolls</td>
<td>749</td>
</tr>
<tr>
<td>Umbeland series</td>
<td>750</td>
</tr>
<tr>
<td>Unius series</td>
<td>751</td>
</tr>
<tr>
<td>Unsel series</td>
<td>752</td>
</tr>
<tr>
<td>Unsel Variant</td>
<td>753</td>
</tr>
<tr>
<td>Valmy series</td>
<td>754</td>
</tr>
<tr>
<td>Walti series</td>
<td>755</td>
</tr>
<tr>
<td>Series</td>
<td>Page</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Wardenot series</td>
<td>756</td>
</tr>
<tr>
<td>Welch series</td>
<td>757</td>
</tr>
<tr>
<td>Wendane series</td>
<td>758</td>
</tr>
<tr>
<td>Whirlo series</td>
<td>759</td>
</tr>
<tr>
<td>Wholan series</td>
<td>760</td>
</tr>
<tr>
<td>Wieland series</td>
<td>761</td>
</tr>
<tr>
<td>Xine series</td>
<td>763</td>
</tr>
<tr>
<td>Yobe series</td>
<td>763</td>
</tr>
<tr>
<td>Zaidy series</td>
<td>764</td>
</tr>
<tr>
<td>Zineb series</td>
<td>765</td>
</tr>
<tr>
<td>Zoesta series</td>
<td>766</td>
</tr>
<tr>
<td>Zoesta Variant</td>
<td>767</td>
</tr>
<tr>
<td>Formation of the soils</td>
<td>769</td>
</tr>
<tr>
<td>References</td>
<td>777</td>
</tr>
<tr>
<td>Glossary</td>
<td>779</td>
</tr>
<tr>
<td>Appendix</td>
<td>791</td>
</tr>
<tr>
<td>Tables</td>
<td>807</td>
</tr>
<tr>
<td>Rangeland plants and woodland</td>
<td>933</td>
</tr>
</tbody>
</table>

Issued November 1991
# Index to Map Units

<table>
<thead>
<tr>
<th>Page</th>
<th>Map Unit Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>Akerue-Simpark-Robson association</td>
<td>25</td>
</tr>
<tr>
<td>121</td>
<td>Akerue-Simpark-Punchbowl association</td>
<td>28</td>
</tr>
<tr>
<td>141</td>
<td>Unsley-Wardenbelt-Belted association</td>
<td>30</td>
</tr>
<tr>
<td>142</td>
<td>Unsley-Caphor-Chedehap association</td>
<td>33</td>
</tr>
<tr>
<td>150</td>
<td>Chedehap-Enko-Ricert association</td>
<td>35</td>
</tr>
<tr>
<td>160</td>
<td>Batan association</td>
<td>38</td>
</tr>
<tr>
<td>161</td>
<td>Batan silt loam</td>
<td>39</td>
</tr>
<tr>
<td>162</td>
<td>Batan-Kelk association</td>
<td>40</td>
</tr>
<tr>
<td>168</td>
<td>Batan-Bibus-Ocala association</td>
<td>43</td>
</tr>
<tr>
<td>169</td>
<td>Batan-Ocala association</td>
<td>45</td>
</tr>
<tr>
<td>170</td>
<td>Beoska-Orovada association</td>
<td>48</td>
</tr>
<tr>
<td>171</td>
<td>Beoska silt loam, 2 to 8 percent slopes</td>
<td>49</td>
</tr>
<tr>
<td>172</td>
<td>Beoska-Tenabo complex</td>
<td>51</td>
</tr>
<tr>
<td>173</td>
<td>Beoska-Allor association</td>
<td>52</td>
</tr>
<tr>
<td>174</td>
<td>Beoska-Chiara association</td>
<td>54</td>
</tr>
<tr>
<td>175</td>
<td>Beoska-Whirlo-Misad association</td>
<td>56</td>
</tr>
<tr>
<td>177</td>
<td>Beoska-Dewar-Orovada association</td>
<td>58</td>
</tr>
<tr>
<td>180</td>
<td>Needle Peak-Batan-Yobe association</td>
<td>61</td>
</tr>
<tr>
<td>190</td>
<td>Wardenot-Sundown association</td>
<td>63</td>
</tr>
<tr>
<td>191</td>
<td>Wardenot-Laxal association</td>
<td>65</td>
</tr>
<tr>
<td>200</td>
<td>Izo-Misad association</td>
<td>67</td>
</tr>
<tr>
<td>201</td>
<td>Izo-Bibus association</td>
<td>69</td>
</tr>
<tr>
<td>210</td>
<td>Laxal association</td>
<td>70</td>
</tr>
<tr>
<td>211</td>
<td>Laxal gravelly fine sandy loam, occasionally flooded, 0 to 2 percent slopes</td>
<td>72</td>
</tr>
<tr>
<td>212</td>
<td>Laxal-Tomel association</td>
<td>73</td>
</tr>
<tr>
<td>220</td>
<td>Blackhawk very fine sandy loam, 2 to 8 percent slopes</td>
<td>75</td>
</tr>
<tr>
<td>221</td>
<td>Blackhawk-Tenabo-Desatoya Variant association</td>
<td>77</td>
</tr>
<tr>
<td>231</td>
<td>Broyles very fine sandy loam, 2 to 4 percent slopes</td>
<td>79</td>
</tr>
<tr>
<td>235</td>
<td>Broyles-Creemon association</td>
<td>80</td>
</tr>
<tr>
<td>236</td>
<td>Broyles association</td>
<td>82</td>
</tr>
<tr>
<td>237</td>
<td>Broyles-Beoska-Orovada association</td>
<td>84</td>
</tr>
<tr>
<td>239</td>
<td>Broyles-Tessfye-Perlto association</td>
<td>86</td>
</tr>
<tr>
<td>249</td>
<td>Bibus association</td>
<td>89</td>
</tr>
<tr>
<td>260</td>
<td>Umbeland-Wendane association</td>
<td>90</td>
</tr>
<tr>
<td>261</td>
<td>Umbeland-Wendane-Ocala association</td>
<td>92</td>
</tr>
<tr>
<td>262</td>
<td>Umbeland silt loam, frequently flooded, 0 to 2 percent slopes</td>
<td>94</td>
</tr>
<tr>
<td>270</td>
<td>Tomel-Laxal association</td>
<td>95</td>
</tr>
<tr>
<td>280</td>
<td>Chiara-Filiran association</td>
<td>97</td>
</tr>
<tr>
<td>284</td>
<td>Chiara-Dewar association</td>
<td>99</td>
</tr>
<tr>
<td>290</td>
<td>Creemon silt loam, 0 to 2 percent slopes</td>
<td>101</td>
</tr>
<tr>
<td>291</td>
<td>Creemon-Wholan association</td>
<td>102</td>
</tr>
<tr>
<td>295</td>
<td>Creemon-Cren association</td>
<td>104</td>
</tr>
<tr>
<td>296</td>
<td>Creemon-Hessing association</td>
<td>106</td>
</tr>
<tr>
<td>297</td>
<td>Creemon-Rasille-Tulase association</td>
<td>108</td>
</tr>
<tr>
<td>298</td>
<td>Creemon-Misad association</td>
<td>110</td>
</tr>
<tr>
<td>301</td>
<td>Cren-Ocala-Playas association</td>
<td>112</td>
</tr>
<tr>
<td>310</td>
<td>Yobe-Kawich-Playas association</td>
<td>114</td>
</tr>
<tr>
<td>320</td>
<td>Newpass-Jung association</td>
<td>116</td>
</tr>
<tr>
<td>321</td>
<td>Newpass-Old Camp association</td>
<td>118</td>
</tr>
<tr>
<td>360</td>
<td>Eastwell-Blackhawk-Pineval association</td>
<td>120</td>
</tr>
<tr>
<td>404</td>
<td>Glean-Gando association</td>
<td>123</td>
</tr>
<tr>
<td>441</td>
<td>Gund-Umberland association</td>
<td>124</td>
</tr>
<tr>
<td>442</td>
<td>Gund-Bibus-Wendane association</td>
<td>126</td>
</tr>
<tr>
<td>443</td>
<td>Gund-Batan association</td>
<td>128</td>
</tr>
<tr>
<td>444</td>
<td>Gund association</td>
<td>130</td>
</tr>
<tr>
<td>461</td>
<td>Hapgood-Packer-Layview association</td>
<td>132</td>
</tr>
<tr>
<td>463</td>
<td>Hapgood-Packer-Rubble land association</td>
<td>134</td>
</tr>
<tr>
<td>465</td>
<td>Hapgood-Halacan-Hatur association</td>
<td>136</td>
</tr>
<tr>
<td>491</td>
<td>Enko-Orovada association, gently sloping</td>
<td>138</td>
</tr>
<tr>
<td>492</td>
<td>Enko-Glyphs association</td>
<td>140</td>
</tr>
<tr>
<td>493</td>
<td>Enko-Orovada association, nearly level</td>
<td>142</td>
</tr>
<tr>
<td>512</td>
<td>Hessing-Relley association</td>
<td>144</td>
</tr>
<tr>
<td>560</td>
<td>Jesse Camp silt loam</td>
<td>146</td>
</tr>
<tr>
<td>621</td>
<td>Loncan-Gando-Glean association</td>
<td>147</td>
</tr>
<tr>
<td>632</td>
<td>McConnel-Orovada-Misad association</td>
<td>149</td>
</tr>
<tr>
<td>633</td>
<td>McConnel-Rasille-Wholan association</td>
<td>152</td>
</tr>
<tr>
<td>635</td>
<td>McConnel-Rasille association</td>
<td>154</td>
</tr>
<tr>
<td>636</td>
<td>McConnel-Defier-Rasille association</td>
<td>156</td>
</tr>
<tr>
<td>637</td>
<td>McConnel-Orovada association</td>
<td>159</td>
</tr>
<tr>
<td>638</td>
<td>McConnel-Wholan association</td>
<td>161</td>
</tr>
<tr>
<td>670</td>
<td>Filiran-Pineval-Kingingham association</td>
<td>163</td>
</tr>
<tr>
<td>674</td>
<td>Filiran-Buffaran association</td>
<td>165</td>
</tr>
<tr>
<td>675</td>
<td>Filiran-Buffaran-Orovada association</td>
<td>167</td>
</tr>
<tr>
<td>680</td>
<td>Skullwak-Umberland-Wendane association</td>
<td>170</td>
</tr>
<tr>
<td>683</td>
<td>Ocala-Sonoma-Paranat association</td>
<td>172</td>
</tr>
<tr>
<td>700</td>
<td>Orovada-Rasille-Wholan association</td>
<td>174</td>
</tr>
<tr>
<td>701</td>
<td>Orovada fine sandy loam, 2 to 4 percent slopes</td>
<td>177</td>
</tr>
<tr>
<td>Association Name</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Orovada-Creemon association</td>
<td>178</td>
<td></td>
</tr>
<tr>
<td>Orovada fine sandy loam, 0 to 2 percent slopes</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>Orovada-McConnel association</td>
<td>181</td>
<td></td>
</tr>
<tr>
<td>Orovada-Valmy association</td>
<td>183</td>
<td></td>
</tr>
<tr>
<td>Playas</td>
<td>184</td>
<td></td>
</tr>
<tr>
<td>Porcal-Lopwash association</td>
<td>185</td>
<td></td>
</tr>
<tr>
<td>Ravenswood-Itica-Walti association</td>
<td>186</td>
<td></td>
</tr>
<tr>
<td>Ravenswood-Shagnasty-Walti association</td>
<td>189</td>
<td></td>
</tr>
<tr>
<td>Relay silt loam, 0 to 2 percent slopes</td>
<td>191</td>
<td></td>
</tr>
<tr>
<td>Relay silt loam, frequently flooded, 0 to 2 percent slopes</td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>Rutab loam, 0 to 2 percent slopes</td>
<td>194</td>
<td></td>
</tr>
<tr>
<td>Shagnasty-Roca-Rock outcrop association</td>
<td>195</td>
<td></td>
</tr>
<tr>
<td>Shagnasty-Softscrabble association</td>
<td>196</td>
<td></td>
</tr>
<tr>
<td>Shipley silt loam, occasionally flooded, 0 to 2 percent slopes</td>
<td>198</td>
<td></td>
</tr>
<tr>
<td>Silverado sandy loam, 0 to 2 percent slopes</td>
<td>199</td>
<td></td>
</tr>
<tr>
<td>Sonoma-Wendane association</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Sonoma-Paranat association</td>
<td>202</td>
<td></td>
</tr>
<tr>
<td>Sonoma-Wendane-Paranat association</td>
<td>205</td>
<td></td>
</tr>
<tr>
<td>Stampede-Handy-Caniwe association</td>
<td>207</td>
<td></td>
</tr>
<tr>
<td>Tenabo-Orovada-Buffaran association</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>Tenabo-Ricert-Desatoya association</td>
<td>212</td>
<td></td>
</tr>
<tr>
<td>Tulase-Bubus-McConnel association</td>
<td>215</td>
<td></td>
</tr>
<tr>
<td>Fortank gravelly loam, 4 to 8 percent slopes</td>
<td>217</td>
<td></td>
</tr>
<tr>
<td>Wendane silt loam, frequently flooded</td>
<td>218</td>
<td></td>
</tr>
<tr>
<td>Wendane-Umbderland association</td>
<td>219</td>
<td></td>
</tr>
<tr>
<td>Wendane-Gund association</td>
<td>222</td>
<td></td>
</tr>
<tr>
<td>Wendane silt loam, occasionally flooded</td>
<td>224</td>
<td></td>
</tr>
<tr>
<td>Wendane-Playas association</td>
<td>225</td>
<td></td>
</tr>
<tr>
<td>Wendane-Sonoma-Valmy association</td>
<td>227</td>
<td></td>
</tr>
<tr>
<td>Wendane-Bubus association</td>
<td>229</td>
<td></td>
</tr>
<tr>
<td>Whirlo-Broyles association</td>
<td>231</td>
<td></td>
</tr>
<tr>
<td>Wholan silt loam, alkaline</td>
<td>232</td>
<td></td>
</tr>
<tr>
<td>Wholan-Rasille association, alkaline</td>
<td>233</td>
<td></td>
</tr>
<tr>
<td>Wholan-Rasille association, nonalkaline</td>
<td>235</td>
<td></td>
</tr>
<tr>
<td>Ricert-Whirlo-Pineval association</td>
<td>237</td>
<td></td>
</tr>
<tr>
<td>Ricert-Broyles association</td>
<td>239</td>
<td></td>
</tr>
<tr>
<td>Ricert-Zineb-Pineval association</td>
<td>241</td>
<td></td>
</tr>
<tr>
<td>Ricert-Bubus-Broyles association</td>
<td>244</td>
<td></td>
</tr>
<tr>
<td>Ricert-Tenabo-Broyles association</td>
<td>247</td>
<td></td>
</tr>
<tr>
<td>Ricert-Orovada-Broyles association</td>
<td>248</td>
<td></td>
</tr>
<tr>
<td>Ricert-Orovada-Tenabo association</td>
<td>251</td>
<td></td>
</tr>
<tr>
<td>Ricert-Blackhawk-Orovada association</td>
<td>253</td>
<td></td>
</tr>
<tr>
<td>Chad-Gando-Softscrabble association</td>
<td>256</td>
<td></td>
</tr>
<tr>
<td>Atlow-Stingdorn association</td>
<td>258</td>
<td></td>
</tr>
<tr>
<td>Dumps and pits</td>
<td>260</td>
<td></td>
</tr>
<tr>
<td>Wieland-Allor association</td>
<td>261</td>
<td></td>
</tr>
<tr>
<td>Zineb gravelly loam, 2 to 8 percent slopes</td>
<td>262</td>
<td></td>
</tr>
<tr>
<td>Zineb-Chiara-Wieland association</td>
<td>263</td>
<td></td>
</tr>
<tr>
<td>Zineb-Orovada association</td>
<td>266</td>
<td></td>
</tr>
<tr>
<td>Unius-Orovada association</td>
<td>268</td>
<td></td>
</tr>
<tr>
<td>Glyphs-Silverado association</td>
<td>270</td>
<td></td>
</tr>
<tr>
<td>Glyphs-Muni association</td>
<td>272</td>
<td></td>
</tr>
<tr>
<td>Glyphs-Muni-Orovada association</td>
<td>274</td>
<td></td>
</tr>
<tr>
<td>Glyphs-Enko association</td>
<td>276</td>
<td></td>
</tr>
<tr>
<td>Rotinom-Wholan association</td>
<td>279</td>
<td></td>
</tr>
<tr>
<td>Rotinom-Orovada association</td>
<td>281</td>
<td></td>
</tr>
<tr>
<td>Muni-Orovada-Unius association</td>
<td>283</td>
<td></td>
</tr>
<tr>
<td>Oxcord-Beoska-Whirlo association</td>
<td>285</td>
<td></td>
</tr>
<tr>
<td>Oxcord-Zaidy-Grassval association</td>
<td>288</td>
<td></td>
</tr>
<tr>
<td>Oxcord-Pineval association</td>
<td>290</td>
<td></td>
</tr>
<tr>
<td>Oxcord-Wieland-Spapsrey association</td>
<td>293</td>
<td></td>
</tr>
<tr>
<td>Fenster-Jesse Camp association</td>
<td>295</td>
<td></td>
</tr>
<tr>
<td>Punchbowl-Jung-Teguro association</td>
<td>297</td>
<td></td>
</tr>
<tr>
<td>Punchbowl-Jung-Locane association</td>
<td>299</td>
<td></td>
</tr>
<tr>
<td>Punchbowl gravelly loam, 4 to 15 percent slopes</td>
<td>302</td>
<td></td>
</tr>
<tr>
<td>Punchbowl-Teguro-Sumine association</td>
<td>303</td>
<td></td>
</tr>
<tr>
<td>Punchbowl-Belate-Reluctan association</td>
<td>305</td>
<td></td>
</tr>
<tr>
<td>Punchbowl-Rock outcrop association</td>
<td>307</td>
<td></td>
</tr>
<tr>
<td>Punchbowl-Simpark-Akerue association</td>
<td>308</td>
<td></td>
</tr>
<tr>
<td>Punchbowl-Robson-Rock outcrop association</td>
<td>311</td>
<td></td>
</tr>
<tr>
<td>Punchbowl-Locane-Nobuck association</td>
<td>313</td>
<td></td>
</tr>
<tr>
<td>Punchbowl-Itica association</td>
<td>315</td>
<td></td>
</tr>
<tr>
<td>Punchbowl-Roca-Rock outcrop association</td>
<td>317</td>
<td></td>
</tr>
<tr>
<td>Grassval-Grina-Unsel Variant association</td>
<td>319</td>
<td></td>
</tr>
</tbody>
</table>
2101—Grassval-Oxcorel association .......................... 321
2102—Grassval-Wieland association .......................... 324
2104—Grassval-Punchbowl association ....................... 325
2105—Grassval-Glyphs-Muni association ..................... 327
2110—Isolde-Davey association ............................. 330
2540—Buffaran-Wieland association .......................... 331
2541—Buffaran-Zoesta association ............................ 333
2542—Buffaran-Chiara association ............................ 334
2543—Buffaran-Spasphey-Allor association .................. 337
2545—Buffaran-Pineval association ........................... 339
2546—Buffaran-Spasphey-Locane association ................ 341
2547—Buffaran-Desatoya association .......................... 343
2548—Buffaran-Tenabo-Pineval association .................. 345
2554—Laped-Hoople-Osoll association ........................ 348
2555—Laped-Colbar association .............................. 350
2570—Colbar-Atlow-Burrata association ....................... 352
2603—Grina-Genaw association ............................... 354
2640—Rasile-Kelk association ................................. 356
2672—Zoesta Variant-Jung-Trunk association ................ 358
2681—Tessfive-Puett-Grina association ........................ 360
2683—Tessfive-Genaw-Orovada association .................... 362
2684—Tessfive-Perlor-Orovada association .................... 365
2690—Itca Variant-Reluctan-Handy association ............... 367
2730—Pula-Spike-Buffaran association ........................ 370
2731—Pula-Spike association ................................. 372
2740—Spike-Desatoya Variant-Grassval association ........... 374
2771—Kram-Hopeka-Rock outcrop association ................ 376
2780—Desatoya-Tenabo-Pineval association ................... 378
2781—Desatoya-Orovada association ........................... 381
2782—Desatoya-Pineval-Grassval association ................ 383
2783—Desatoya-Spike association ............................. 385
2791—Old Camp-Colbar-Rock outcrop association ............... 387
2792—Old Camp-Allor-Puett association ........................ 389
2793—Old Camp-Laped association ............................. 392
2797—Old Camp-Colbar association ............................ 393
2798—Old Camp-Atlow-Osoll association ........................ 396
3001—Barrier-Kobeh association ............................ 398
3011—Defler-Orovada association ............................ 400
3050—Novacan cobbly loam, 2 to 8 percent slopes .......... 402
3071—Allor-Wieland association ............................. 403
3072—Allor-Orovada association, moderately sloping .......... 405
3073—Allor-Kelk association ................................. 406
3074—Allor-Orovada association, nearly level ............... 408
3080—Zaidy-Ricert association .............................. 410
3081—Zaidy-Allor association ............................... 412
3091—Packer-Newlands association .......................... 413
3092—Packer-Hapgood-Rock outcrop association .............. 416
3093—Packer-Layview-Hapgood association ................... 417
3094—Packer-Hapgood-Torro association ...................... 420
3101—Hackwood-Newlands-Hapgood association ................. 422
3111—Ninemile-Zoesta-Itca association ........................ 424
3120—Walti-Softscrbble-Chad association ..................... 427
3121—Walti-Softscrbble-Cnucan association ................... 429
3122—Walti-Sumine-Softscbble association .................... 431
3123—Walti-Softscbble-Itca association ........................ 434
3125—Walti-Robson-Softscbble-Robson association ........... 436
3130—Itca-Clanalpine-Reluctan association .................. 439
3131—Itca-Ninemile-Rock outcrop association ................. 441
3132—Itca-Softscbble-Cleavage association ................... 443
3134—Itca-Clanalpine-Torro association ....................... 445
3135—Itca-Clanalpine-Rock outcrop association ............... 448
3136—Itca-Roca-Reluctan association ........................ 449
3137—Itca-Reluctan-Walti association ......................... 452
3140—Sochouse-Tenabo-Desatoya Variant association ........ 454
3151—Robson-Ninemile-Ravenswood association ................ 457
3153—Robson-Locane-Softscbble association .................... 459
3154—Robson-Locane-Rock outcrop association ................ 461
3155—Robson-Itca-Softscbble association ........................ 463
3170—Teguro-Rubble land-Punchbowl association ................ 466
3181—Newlands-Packer-Hapgood association, moderately steep .... 467
3182—Newlands-Packer-Hapgood association, strongly sloping . 470
3190—Softscbble-Clanalpine-Walti association ................. 472
<table>
<thead>
<tr>
<th>Soil Association</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3192—Softscrable-Walti-Cleavage association</td>
<td>474</td>
</tr>
<tr>
<td>3200—Dewar gravelly loam, 2 to 8 percent</td>
<td></td>
</tr>
<tr>
<td>slopes</td>
<td>477</td>
</tr>
<tr>
<td>3210—Typic Argixerolls-Torripsammentic</td>
<td></td>
</tr>
<tr>
<td>Haploxerolls-Glean association</td>
<td>478</td>
</tr>
<tr>
<td>3231—Stingdorn-Hoopleite association</td>
<td>480</td>
</tr>
<tr>
<td>3251—Caphor-Tenabo-Spasprey association</td>
<td>482</td>
</tr>
<tr>
<td>3252—Caphor-Batan-Unsel association</td>
<td>485</td>
</tr>
<tr>
<td>3253—Caphor association</td>
<td>487</td>
</tr>
<tr>
<td>3270—Koyen fine sandy loam, 2 to 4 percent</td>
<td></td>
</tr>
<tr>
<td>slopes</td>
<td>489</td>
</tr>
<tr>
<td>3310—Spasprey-Allor association</td>
<td>490</td>
</tr>
<tr>
<td>3312—Spasprey-Buffaran-Orovada association</td>
<td>492</td>
</tr>
<tr>
<td>3314—Spasprey-Allor-Orovada association</td>
<td>494</td>
</tr>
<tr>
<td>3341—Halacan-Hatur-Rock outcrop association</td>
<td>497</td>
</tr>
<tr>
<td>3342—Halacan-Hapgood-Granzan association</td>
<td>498</td>
</tr>
<tr>
<td>3411—Zoesta-Robson-Softscrable association</td>
<td>501</td>
</tr>
<tr>
<td>3415—Zoesta-Handy association</td>
<td>503</td>
</tr>
<tr>
<td>3417—Zoesta-Roca-Softscrable association</td>
<td>505</td>
</tr>
<tr>
<td>3421—Belate-Softscrable-Torro association</td>
<td>507</td>
</tr>
<tr>
<td>3422—Belate-Robson-Torro association</td>
<td>509</td>
</tr>
<tr>
<td>3423—Belate-Cleavage-Softscrable association</td>
<td>512</td>
</tr>
<tr>
<td>3450—Reluctan-Robson-Cleavage association</td>
<td>514</td>
</tr>
<tr>
<td>3453—Reluctan-Locane-Itca association</td>
<td>516</td>
</tr>
<tr>
<td>3455—Reluctan-Roca-Colbar association</td>
<td>519</td>
</tr>
<tr>
<td>3457—Reluctan-Clanalpine-Roca association</td>
<td>521</td>
</tr>
<tr>
<td>3461—Torro-Rubble land-Cleavage association</td>
<td>523</td>
</tr>
<tr>
<td>3462—Torro-Reluctan-Cleavage association</td>
<td>525</td>
</tr>
<tr>
<td>3463—Torro-Clanalpine-Itca association</td>
<td>528</td>
</tr>
<tr>
<td>3464—Torro-Itca-Softscrable association</td>
<td>530</td>
</tr>
<tr>
<td>3465—Torro-Clanalpine-Softscrable association</td>
<td>532</td>
</tr>
<tr>
<td>3562—Locane-Coztur-Punchbowl association</td>
<td>535</td>
</tr>
<tr>
<td>3563—Locane-Muni association</td>
<td>537</td>
</tr>
<tr>
<td>3625—Minat-Coztur-Belate association</td>
<td>539</td>
</tr>
<tr>
<td>3690—Izod-Koyink-Rock outcrop association</td>
<td>541</td>
</tr>
<tr>
<td>3740—Kelk silt loam, saline</td>
<td>543</td>
</tr>
<tr>
<td>3741—Kelk-Settlemeyer association</td>
<td>544</td>
</tr>
<tr>
<td>3742—Kelk-Ocala association</td>
<td>546</td>
</tr>
<tr>
<td>3840—Jung-Newpass association</td>
<td>548</td>
</tr>
<tr>
<td>3841—Jung-Itca-Roca association</td>
<td>550</td>
</tr>
<tr>
<td>3842—Jung-Hoopleite association</td>
<td>552</td>
</tr>
<tr>
<td>3843—Jung-Newpass-Teguro association</td>
<td>554</td>
</tr>
<tr>
<td>3845—Jung-Stingdorn-Atlow association</td>
<td>556</td>
</tr>
<tr>
<td>3846—Jung-Atlow-McVegas association</td>
<td>559</td>
</tr>
<tr>
<td>3847—Jung-Old Camp-Clanalpine association</td>
<td>561</td>
</tr>
<tr>
<td>3848—Jung-McVegas-Enko association</td>
<td>563</td>
</tr>
<tr>
<td>3851—Decram-Hapgood association</td>
<td>566</td>
</tr>
<tr>
<td>3852—Decram-Hapgood-Chad association</td>
<td>568</td>
</tr>
<tr>
<td>3861—Duco-Itca-Roca association</td>
<td>570</td>
</tr>
<tr>
<td>3863—Duco-Clanalpine-Jung association</td>
<td>573</td>
</tr>
<tr>
<td>3881—Layview-Packer-Hapgood association</td>
<td>575</td>
</tr>
<tr>
<td>3891—Labshaft-Hapgood-Rock outcrop association</td>
<td>577</td>
</tr>
<tr>
<td>3950—Hoopleite-Jung-Izod association</td>
<td>579</td>
</tr>
<tr>
<td>3951—Hoopleite-Old Camp-Puett association</td>
<td>582</td>
</tr>
<tr>
<td>3952—Hoopleite-Stingdorn association</td>
<td>584</td>
</tr>
<tr>
<td>3960—Pineval gravelly loam, 2 to 4 percent slopes</td>
<td>586</td>
</tr>
<tr>
<td>3961—Pineval-Orovada-Beoska association</td>
<td>587</td>
</tr>
<tr>
<td>3964—Pineval-Orovada association</td>
<td>589</td>
</tr>
<tr>
<td>3990—Settlemeyer fine sandy loam, drained, 0 to 2 percent slopes</td>
<td>591</td>
</tr>
<tr>
<td>3991—Settlemeyer-Pineval association</td>
<td>592</td>
</tr>
<tr>
<td>3992—Settlemeyer complex</td>
<td>594</td>
</tr>
<tr>
<td>4041—Hymas-Xine-Attella association</td>
<td>596</td>
</tr>
<tr>
<td>4070—Genaw-Wieland-Grina association</td>
<td>598</td>
</tr>
<tr>
<td>4072—Genaw-Orovada-Puett association</td>
<td>600</td>
</tr>
<tr>
<td>4073—Genaw-Broyles-Perlor association</td>
<td>603</td>
</tr>
<tr>
<td>4140—Welch loam, drained, 2 to 8 percent slopes</td>
<td>605</td>
</tr>
</tbody>
</table>
Summary of Tables

Temperature and precipitation (table 1) ........................................ 808

Freeze dates in spring and fall (table 2) ........................................ 810
  Probability. Temperature.

Growing season (table 3) ............................................................ 812

Acreage and proportionate extent of the soils (table 4) .................... 813
  Acres. Percent.

Engineering index properties (table 5) ........................................ 818
  Depth. USDA texture. Classification—Unified, AASHTO.
  Fragments greater than 3 inches. Percentage passing
  sieve number—4, 10, 40, 200. Liquid limit. Plasticity index.

Classification of the soils (table 6) ............................................. 929
  Family or higher taxonomic class.
Foreword

This soil survey contains information that can be used in land-planning programs in Lander County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the suitability of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

William D. Goddard
State Conservationist
Soil Conservation Service
Location of Lander County, south part, in Nevada.
Soil Survey of
Landers County, Nevada, South Part

By Carole E. Jett, Soil Conservation Service

Fieldwork by Carole E. Jett, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service,
in cooperation with
United States Department of the Interior, Bureau of Land Management,
and University of Nevada, Agricultural Experiment Station

The survey area is in the central part of Nevada. It has a total area of 1,554,671 acres. Austin and
Kingston are the only communities in the survey area.
The survey area consists of numerous mountain
ranges and valleys that are oriented north and south.
Elevations range from 8,500 feet in the mountains to
6,100 feet in the valleys. The Reese River flows
northward through the central part of the area.
Public lands in the area are administered by the
Bureau of Land Management and the Forest Service.
Land administered by the Forest Service is not included
in this survey.
The descriptions, names, and delineations of soils in
this soil survey do not fully agree with those in the
surveys of adjacent areas. Differences are the result of
a better knowledge of soils, modifications in series
concepts, and variations in the intensity of mapping or
in the extent of the soils within the survey areas.

General Nature of the Survey Area

This section gives general information about the
survey area. It briefly discusses history, water supply,
industries and transportation facilities, drainage,
geology, and climate.

History

Landers County was first explored in 1828 by Peter
Skeen Ogden. In 1841, the first immigrants came into
the area on their way to California. By 1844, the
winding course of the Humboldt River, known as the
"Humboldt Trail," had become a thoroughfare for the
westward procession of immigrants.

Settlement of the southern part of Landers County
began with the discovery of gold in 1862, at which time
the Reese River Mining District and the town of Austin
were established. Completion of the transcontinental
railroad in 1869 and the Nevada Central Railroad
opened the area to markets in the east and west.

Mining is still a major industry in the area, but the
number of operations has diminished.

Water Supply

Irrigation water in the area is supplied by wells and
streams. Water from wells is used to irrigate alfalfa and
small grain in the arid valleys, and water from streams
is used to irrigate native meadows and pastures along
drainageways. At the higher elevations numerous small
springs, seeps, and small intermittent streams provide
adequate watering facilities for livestock and wildlife.

Water for the community of Austin is supplied by
springs and streams. Wells and streams provide water
for domestic use in rural areas.

Industries and Transportation Facilities

The main industries in the survey area are ranching
and mining.

The ranches are dominantly cow-calf operations, and
the current year's crop generally is sold in fall and
exported. A few herds of sheep are in the area.
Numerous mines are in the Austin area. The major minerals are gold, silver, and turquoise.

Three principal highways run through the survey area. U.S. Highway 50 runs east and west through Austin, State Highway 305 runs from north of Austin to Battle Mountain, and State Highway 376 runs from south of Highway 50 to Tonopah. Although these are the only paved roads in the survey area, many areas are accessible by dirt roads and trails suitable for four-wheel-drive vehicles.

**Drainage**

A large part of the survey area is drained by the Reese River, an intermittent axial stream that flows northward through the area and joins the Humboldt River near Battle Mountain. The southeast corner of the area is drained by Stoneberger Creek, which flows northward through Monitor Valley and into the Kobeh Valley in Eureka County.

The remaining areas, including the Big Smoky, Grass, and Smith Creek Valleys, are internally drained basins, or bolsons. They are drained by intermittent streams that flow only in spring and during local thunderstorms in summer and that end in a central playa.

**Geology**

The geology of the survey area is variable and complex (25).

Most outcrops of pre-Tertiary age in the area consist of sedimentary and metasedimentary rock, mainly interbedded chert, shale, argillite, greenstone, limestone, and quartzite. Most of New Pass Range and the central part of the Shoshone Mountains and Toiyabe Range consist dominantly of this rock. Soils derived from this rock include those of the Atlow, Decram, Packer, and Torro series.

The volcanic rock in the survey area consists mainly of rhyolitic and andesitic tuff, welded ashflow tuff, basalt, and related pyroclastic rock. Most of this volcanic rock is of the Miocene and Pliocene epochs. The Desatoya, Shoshone, and Simpson Park Mountains and parts of the Toiyabe Range north of Boone and Skull Creeks consist dominantly of this rock. Soils derived from this rock include those of the Akerue, Colbar, Clanalpine, Reluctant, and Wati series.

The oldest valley fill in the area is of Tertiary age. It is along both sides of the Reese River Valley, on the eastern side of Gilbert Creek, and near New Pass and Carroll Summits and Mount Airy. This valley fill is partially lithified and typically consists of siltstone, sandstone, conglomerate, and some volcanic ash. Soils that formed in this material include those of the Genaw, Perlir, Puett, and Tessfive series.

The piedmont slopes in the valleys are made up of Quaternary alluvium that contains loess that is high in content of volcanic ash. Soils that formed in this alluvium include those of the Allor, Buffaran, Muni, Orovada, and Wieland series.

The youngest material in the area is the recent alluvium along the flood plains of the Reese River and Stoneberger Creek and on bolson floors in the Big Smoky, Grass, and Smith Creek Valleys. Soils that formed in this material are those of the Batan, Bubus, Sonoma, and Wholan series.

**Climate**

In this survey area, summers are hot, especially at the lower elevations, and winters are cold. At the lower elevations, precipitation normally is light throughout the year. The land in these areas is used mainly for range. At the higher elevations, precipitation is much greater and snow accumulates to considerable depths. Much of the snowmelt is used to irrigate crops in nearby valleys.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Austin, Battle Mountain, and Central Field Laboratory. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season. The climate at Battle Mountain, which is outside the survey area, closely resembles that of the lower elevations in the northern part of the area.

In winter, the average temperature is 31 degrees F and the average daily minimum temperature is 20 degrees. The lowest temperatures on record are -30 degrees at Battle Mountain on December 9, 1972, and -28 degrees at Central Field Laboratory on December 11, 1972. In summer, the average temperature is 64 degrees and the average daily maximum temperature is about 86 degrees. The highest temperature, 109 degrees, was recorded at Battle Mountain on July 27, 1975.

Growing degree days, shown in table 1, are equivalent to "heat units." Beginning in spring, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 14 inches at Austin and 7 inches at Battle Mountain and Central Field
Laboratory. Of this, 60 percent usually falls in April through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the periods of record was 2.27 inches at Battle Mountain on October 12, 1963. Thunderstorms occur on about 12 days each year.

The average seasonal snowfall is 40 inches at Austin, 24 inches at Battle Mountain, and 30 inches at Central Field Laboratory. The greatest snow depth at any one time during the period of record was 23 inches at Austin. On the average, 31 days at Austin, 14 days at Battle Mountain, and 26 days at Central Field Laboratory have at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year. Every few years a blizzard strikes the survey area with high winds and drifting snow. Even at the lower elevations, the snow remains on the ground for many weeks and livestock suffer.

The average relative humidity in midafternoon is about 30 percent. Humidity is higher at night, and the average at dawn is about 65 percent. The sun shines 85 percent of the time possible in summer and 60 percent in winter. The prevailing wind is from the west. Average windspeed is highest, 9 miles per hour, in spring.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. The fieldwork in the northern one-third of the survey area was done by soil scientists employed by the Soil Conservation Service, and the fieldwork in the southern two-thirds of the area was done by soil scientists employed by Soil and Land Use Technology, Inc., which was under contract to the Bureau of Land Management. The soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated parent material in which the soil formed. The unconsolidated material is devoid of roots and most other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil or miscellaneous area is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how they were formed. During mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes. Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

Because a large part of Lander County was mapped under several private contracts, some of the typical pedons described in this survey are located in the soil survey areas of Lander County, Nevada, North Part, and Eureka County Area, Nevada. As the survey progressed, it was determined that some of the soils in the area had already been mapped under contract. The typical pedon descriptions already completed for these soils were used, regardless of the survey area in which they occurred. The survey area in which the typical pedon for each taxonomic unit is located is given in the section "Taxonomic Units and Their Morphology."
Figure 1.—The major physiographic parts of an internally drained intermontane basin, or bolson: the piedmont slope (P) and the basin floor, or, more specifically, the bolson floor (F). This drawing shows part of an elongated bolson that has bounding mountain ranges on the near and far sides and is cut off by hills on the far end. The drainageways, shown by dotted lines, suggest positions of major landforms. Neither the playes nor the drainageways on the floor are shown.

Characteristics of the soils in a map unit in this survey area are similar but not identical to those of the soils outside the survey area.

While a soil survey is in progress, samples of some of the soils in the area are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data also are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.
Soil Landscapes

In this soil survey the mapped areas generally represent associations of two or three soil components and other included soils of limited extent. Soil patterns commonly coincide with landforms and physiographic positions. In the section "Detailed Soil Map Units," descriptive terms are used to identify the location of individual soil components on the landscape. While there is a relationship between the landforms and soils in a given area, these relationships are not mutually exclusive. Individual soil series commonly occur on more than one component landform.

In this survey area the landforms are classified and defined according to Peterson (22). The landform elements are described and defined in a manner precise enough to indicate where soils occur in relation to each other. The intent of this section is not to define all of the landform terms but to define briefly the main geomorphic surfaces in the survey area. All landform terms are defined in the Glossary.

The landforms of the intermontane basins are first grouped into two general classes—bolson (fig. 1) and semibolson (fig. 2). Within these two groups are three major physiographic parts (fig. 3). These are the bounding mountains, the piedmont slope, and the basin floor. The bounding mountains rise less than 1,000 feet above the surrounding boundaries. The piedmont slope and basin floor are topographic forms that slope from the bounding mountains down to a central playa.

Figure 2.—A semibolson that displays the effects of several cycles of dissection and deposition. The major landforms are: bailenas (B); fan piedmonts (P), comprising several levels, or ages, of fan remnants; fan skirts (S); an axial-stream terrace (T); and an axial-stream flood plain (F). Alluvial fans are not distinguished from fan piedmonts. Component landforms of inset fans (I) are between fan remnants. The basin is bounded on two sides by mountains (M).
The shapes, genetic relationships, and geographic scales of the topography seen in the field are used to classify the landforms. The two general classes—bolson and semibolson—are successively divided into smaller and genetically more homogeneous classes (charts 1 and 2). The broadest class is major physiographic parts, each of which is made up of several genetically related major landforms. These landforms in turn may be comprised of several genetically related component landforms. The component landforms are the smallest single units that one would consider in combined terms of their form, constituent materials, and genetic history. Some component landforms, such as fan piedmont remnants, have distinctive topographic parts with quite different geomorphic histories. These parts are called landform elements. The landform elements that are erosional surfaces are subdivided into slope components.

In the section "General Soil Map Units," a landscape position is given for each major component. These generally are major physiographic parts, major landforms, or component landforms. In the section "Detailed Soil Map Units," broad landscape positions are specified for each map unit. These positions apply to the entire unit. They are major physiographic parts or major landforms. A more detailed landscape position also is given for each major component and contrasting inclusion in the map unit. These generally are component landforms, landform elements, or slope components.
<table>
<thead>
<tr>
<th>Major physiographic part</th>
<th>Major landform</th>
<th>Component landform</th>
<th>Landform element</th>
<th>Slope component</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bounding mountains</strong></td>
<td>Mountain valley fan</td>
<td>Erosional fan remnant</td>
<td>Summit</td>
<td>Shoulder slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Side slope</td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Crest</td>
</tr>
<tr>
<td></td>
<td>Rock pediment</td>
<td>Inset fan</td>
<td>Summit</td>
<td>Shoulder slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Side slope</td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Channel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rock pediment remnant</td>
<td>Summit</td>
<td>Shoulder slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Side slope</td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Channel</td>
</tr>
<tr>
<td><strong>Ballena</strong></td>
<td>Inset fan</td>
<td>Fan collar</td>
<td>Summit</td>
<td>Shoulder slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Erosional fan remnant</td>
<td>Side slope</td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Partial ballena</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Channel</td>
</tr>
<tr>
<td></td>
<td>Fan piedmont</td>
<td>Inset fan</td>
<td>Summit</td>
<td>Shoulder slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Side slope</td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Partial ballena</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Channel</td>
</tr>
<tr>
<td></td>
<td>Fan skirt</td>
<td>Inset fan</td>
<td>Beach terrace</td>
<td>Shoulder slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fan apron</td>
<td></td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nonburied fan remnant</td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beach terrace</td>
<td></td>
<td>Channel</td>
</tr>
<tr>
<td><strong>Alluvial flat</strong></td>
<td>Alluvial flat</td>
<td>Reclit alluvial flat</td>
<td></td>
<td>Channel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recent alluvial flat</td>
<td></td>
<td>Channel</td>
</tr>
<tr>
<td><strong>Alluvial plain</strong></td>
<td>Alluvial plain</td>
<td>Sand sheet</td>
<td>Sand dune (Paran</td>
<td>Interdune flat</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>dune)</td>
<td></td>
</tr>
<tr>
<td><strong>Sand sheet</strong></td>
<td>Lake plain</td>
<td>Lake-plain terrace</td>
<td></td>
<td>Channel</td>
</tr>
<tr>
<td></td>
<td>Playa</td>
<td>Flood-plain playa</td>
<td></td>
<td>Channel</td>
</tr>
<tr>
<td>Major physiographic part</td>
<td>Major landform</td>
<td>Component landform</td>
<td>Landform element</td>
<td>Slope component</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------</td>
<td>--------------------</td>
<td>------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Bounding mountains</td>
<td>Mountain valley fan</td>
<td>Erosional fan remnant</td>
<td>Summit</td>
<td>Shoulder slope</td>
</tr>
<tr>
<td>Piedmont slope</td>
<td></td>
<td></td>
<td>Side slope</td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Crest</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Shoulder slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Partial ballena</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Channel</td>
<td></td>
</tr>
<tr>
<td>Rock pediment</td>
<td>Inset fan</td>
<td></td>
<td>Channel</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rock pediment remnant</td>
<td>Summit</td>
<td>Crest</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Side slope</td>
<td>Shoulder slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td>Ballena</td>
<td>Fan collar</td>
<td></td>
<td>Channel</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Erosion fan remnant</td>
<td>Summit</td>
<td>Shoulder slope</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Side slope</td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Partial ballena</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Channel</td>
<td></td>
</tr>
<tr>
<td>Alluvial fan</td>
<td>Inset fan</td>
<td></td>
<td>Channel</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fan apron</td>
<td></td>
<td>Shoulder slope</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Back slope</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nonburied fan remnant</td>
<td>Summit</td>
<td>Shoulder slope</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Side slope</td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td>Fan piedmont</td>
<td>Inset fan</td>
<td></td>
<td>Channel</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Erosional fan remnant</td>
<td>Summit</td>
<td>Shoulder slope</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Side slope</td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Partial ballena</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Channel</td>
<td></td>
</tr>
<tr>
<td>Pediment</td>
<td>Inset fan</td>
<td></td>
<td>Channel</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fan apron</td>
<td></td>
<td>Shoulder slope</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Back slope</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nonburied fan remnant</td>
<td>Summit</td>
<td>Shoulders slope</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Side slope</td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
<tr>
<td>Fan skirt</td>
<td></td>
<td></td>
<td>Channel</td>
<td></td>
</tr>
<tr>
<td>I: Major physiographic part</td>
<td>II: Major landform</td>
<td>III: Component landform</td>
<td>IV: Landform element</td>
<td>V: Slope component</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------</td>
<td>------------------------</td>
<td>---------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Basin floor</td>
<td>Alluvial flat</td>
<td>Relict alluvial flat</td>
<td>Channel</td>
<td>Shoulder slope</td>
</tr>
<tr>
<td>(semibolson floor)</td>
<td>Alluvial plain</td>
<td>Recent alluvial flat</td>
<td>Channel</td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td>Basin floor remnant</td>
<td></td>
<td>Summit</td>
<td>Foot slope</td>
</tr>
<tr>
<td></td>
<td>Sand sheet</td>
<td>Inset fan</td>
<td>Channel</td>
<td>Crest</td>
</tr>
<tr>
<td></td>
<td>Axial-stream flood plain</td>
<td>Sand dune</td>
<td>Channel</td>
<td>Shoulder slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flood-plain playa</td>
<td>Channel</td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stream terrace</td>
<td>Summit</td>
<td>Side slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>River terrace</td>
<td>Side slope</td>
<td>Shoulder slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Back slope</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Foot slope</td>
</tr>
</tbody>
</table>
General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The soils or miscellaneous areas making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils or miscellaneous areas can be identified on the map. Likewise, areas that are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Figures 4 and 5 illustrate how the general soil map units relate to the various broad landscapes. The map units in figure 4 are representative of those on a bolson that is an internally drained intermontane basin, and the units in figure 5 are representative of those on a semibolson that is an externally drained intermontane basin.

The general map units in this survey have been grouped into general kinds of landscape for broad interpretive purposes. Each of the broad groups and the map units in each group are described in the following pages.

Map Unit Descriptions

Areas Dominated by Soils on Bolson and Semibolson Floors

Three map units are in this group. They make up about 11 percent of the survey area.

1. Playas

This map unit is on nearly level basin floors in the sink areas of the Grass and Smith Creek Valleys. It consists of nearly impermeable lacustrine sediment veneered by fine textured sediment or eolian sand. It is barren of vegetation. Water is ponded in areas of this unit after spring runoff in most years.

This unit makes up about 2 percent of the survey area.

This unit is unsuitable for most uses.

2. Wendane-Gund-Batan

Nearly level, very deep, somewhat poorly drained and moderately well drained soils; on alluvial flats and lake plain remnants

This map unit is in the lower part of the Big Smoky, Grass, and Smith Creek Valleys, bordering areas of Playas. The vegetation is mainly basin wildrye, alkali bluegrass, inland saltgrass, black greasewood, and rubber rabbitbrush on the Wendane soils; basin wildrye, black greasewood, and basin big sagebrush on the Gund soils; and bottlebrush squirreltail, shadscale, bud sagebrush, and black greasewood on the Batan soils.

This unit makes up about 5 percent of the survey area.

The somewhat poorly drained Wendane and similar soils are on alluvial flats. These soils have a thin, light-colored upper layer and are dominantly stratified, medium textured and moderately fine textured throughout the profile. They are strongly affected by salt and sodium and are frequently flooded.

The somewhat poorly drained Gund and similar soils are on lake plain remnants. The upper layer of these soils is thin, light colored, and medium textured. Below this is dominantly medium textured or moderately fine textured material over fine textured lake sediment. These soils are strongly affected by salt and sodium and are rarely flooded.

The moderately well drained Batan and similar soils are on alluvial flat remnants. These soils have a thin, light-colored upper layer and are dominantly stratified, medium textured and moderately fine textured throughout the profile. They are strongly affected by salt and sodium and are not subject to flooding.

Of minor extent in this unit are Needle Peak and similar soils, Izo and similar soils, and Playas. Needle
Peak and similar soils are somewhat poorly drained and occasionally flooded. They are moderately fine textured and are on low fan skirts. They are not affected by salt and sodium. They support basin big sagebrush, basin wildrye, and rubber rabbitbrush. Iso and similar soils are excessively drained and rarely flooded. They are extremely gravelly and coarse textured and are on offshore bars. They are slightly affected by salt and sodium. Areas of these soils in the Big Smoky Valley support shadscale, Bailey greasewood, and rabbitbrush, and areas in the Grass and Smith River Valleys support bottlebrush squirreltail, shadscale, and bud sagebrush. Playas are small, irregularly shaped sink areas that are ponded for brief periods, have a strong vesicular crust, and are barren of vegetation.

This unit is used for livestock grazing or wildlife habitat.

3. Sonoma-Wendane-Paranat

Nearly level, very deep, poorly drained and somewhat poorly drained soils; on axial-stream flood plains and alluvial flats

This map unit is in the central part of the survey area, along the Reese River meander belt and at the southern end of the Grass Valley. The vegetation is mainly basin wildrye, creeping wildrye, and sedges on the Sonoma and Paranat soils and basin wildrye, alkali bluegrass, inland saltgrass, black greasewood, and rubber rabbitbrush on the Wendane soils. Flooding of the Reese River is common. It occurs in spring 1 or more years in 5 and lasts 2 days to 1 month.

This unit makes up about 4 percent of the survey area.

The poorly drained Sonoma and similar soils are on axial-stream flood plains. These soils have a thick upper layer and are dominantly stratified, medium textured and moderately fine textured throughout the profile. They generally are not affected by salt and sodium, but they are slightly affected by salt and sodium in the upper layer in some areas.

The poorly drained Wendane and similar soils are on alluvial flats. These soils have a thin, light-colored upper layer and are dominantly stratified, medium textured and moderately fine textured throughout the profile. They are strongly affected by salt and sodium. In some areas they are ponded for long periods.

The poorly drained Paranat and similar soils are on axial-stream flood plains. These soils have a thick, dark upper layer and are dominantly stratified, medium
textured and moderately fine textured material throughout the profile. They are not affected by salt and sodium.

Of minor extent in this unit are Kelk, Valmy, Bubus, the strongly saline Paranat, and similar soils. Kelk and similar soils are well drained and occasionally flooded. They are medium textured and are on alluvial flats. Valmy and similar soils are well drained and are not subject to flooding. They are moderately coarse textured or medium textured and are on narrow fan skirts. Some areas of Kelk and Valmy soils are not affected by salt and sodium, and some are slightly affected in the upper layer and strongly affected in the underlying material. Kelk and Valmy soils support basin wildrye, basin big sagebrush, and black greasewood. Bubus and similar soils are well drained and are not subject to flooding. They are moderately coarse textured or medium textured and are on alluvial flat remnants. They are strongly affected by salt and sodium. They support bottlebrush squirreltail, black greasewood, and shadscale. Paranat and similar soils are strongly saline in the upper layer. They support alkali cordgrass, alkali bluegrass, and basin wildrye.

This unit is used for livestock grazing or wildlife habitat.

**Areas Dominated by Soils on Alluvial Plains, Beach Plains, and Broad Fan Skirts**

Four map units are in this group. They make up about 18 percent of the survey area.

**4. Laxal-Wardenot**

*Nearly level and gently sloping, very deep, somewhat excessively drained and excessively drained soils; on fan skirts and inset fans*

This map unit is along the south-central boundary of the survey area, in the Big Smoky Valley. The vegetation is mainly galleta, Indian ricegrass, shadscale, and Bailey greasewood.

This unit makes up about 5 percent of the survey area.
The somewhat excessively drained Laxal and similar soils are on the broad, lower fan skirts and inset fans. These soils have a thin, light-colored upper layer and are stratified, very gravelly, moderately coarse textured and coarse textured throughout the profile. They generally are not affected by salt and sodium, but they are slightly affected by salt in the lower part in some areas. They are rarely or occasionally flooded.

The excessively drained Wardenot and similar soils are on the upper fan skirts. These soils have a thin, light-colored upper layer and are stratified, very gravelly and coarse textured throughout the profile. They are not affected by salt and sodium and are rarely flooded.

Of minor extent in this unit are Unsels and similar soils and Tomel and similar soils. Unsels and similar soils are very deep. They are moderately fine textured in the upper part and are very gravelly and coarse textured in the lower part. They are on adjacent fan piedmont remnants on the eastern side of the Big Smoky Valley. Tomel and similar soils are shallow to a strongly cemented hardpan and are medium textured. They are on adjacent fan piedmont remnants on the western side of the Big Smoky Valley. Both of the minor soils are well drained and are not subject to flooding. They support Indian ricegrass, shadscale, and Bailey greasewood.

This unit is used for livestock grazing or wildlife habitat.

5. Broyles-Creemon-Wholan

_Nearly level and gently sloping, very deep, well drained soils; on fan skirts and alluvial plains_

This map unit is in the Antelope, Big Smoky, Grass, and Smith Creek Valleys. The vegetation is mainly bottlebrush squirreltail, Indian ricegrass, shadscale, and bud sagebrush on the Broyles and Creemon soils and bottlebrush squirreltail and winterfat on the Wholan soils.

This unit makes up about 4 percent of the survey area.

The nearly level or gently sloping Broyles and similar soils are on the highest fan skirts bordering fan piedmonts. These soils have a thin, light-colored, medium textured upper layer and dominantly stratified, moderately coarse textured and medium textured underlying material. Some areas of these soils are not affected by salt and sodium, and some are slightly affected by salt and sodium in the upper part and are slightly or moderately affected by salt and moderately to strongly affected by sodium in the lower part. The soils are not subject to flooding.

The nearly level Creemon and similar soils are on the lower fan skirts and alluvial plains. These soils have a thin, light-colored, medium textured upper layer and dominantly stratified, medium textured underlying material. The soils are not affected by salt and sodium in the upper part, but they are moderately affected by salt and slightly affected by sodium in the lower part. They are not subject to flooding.

The nearly level Wholan and similar soils are on broad inset fans that shallowly dissect fan skirts and alluvial plains. These soils have a thin, light-colored, medium textured upper layer and dominantly medium textured underlying material. They are not affected by salt and sodium and are rarely flooded.

Of minor extent in this unit are Orovada, Ricert, Batan, and similar soils. Orovada and similar soils are nearly level to moderately sloping and are on fan skirts that receive additional moisture from runoff. They are medium textured and are slightly affected by salt in the lower part. They support Thurber needlegrass, bottlebrush squirreltail, and Wyoming big sagebrush. Ricert and similar soils are nearly level or gently sloping and are on adjacent fan piedmont remnants. They are medium textured and are moderately affected by salt and sodium throughout. They support bottlebrush squirreltail, shadscale, and bud sagebrush. Batan and similar soils are nearly level and are on alluvial flat remnants. They are moderately well drained and are medium textured or moderately fine textured. They are strongly affected by salt and sodium throughout. They support bottlebrush squirreltail, shadscale, and black greasewood.

6. McConnel-Rasille-Wholan

_Nearly level to moderately sloping, very deep, somewhat excessively drained and well drained soils; on beach plains and fan skirts_

This map unit is in the Smith Creek Valley. The vegetation is mainly Indian ricegrass, bluegrass, and Wyoming big sagebrush on the McConnel and Rasille soils and Indian ricegrass and winterfat on the Wholan soils.

This unit makes up about 6 percent of the survey area.

The gently sloping or moderately sloping, somewhat excessively drained McConnel and similar soils are on offshore bars of beach plains that follow the contour of the shoreline. These soils are moderately coarse textured or medium textured over extremely gravelly, coarse textured lacustrine beach sediment. They are not affected by salt and sodium and are not subject to flooding.

The nearly level, well drained Rasille and similar soils are on fan skirts and in lagoons of beach plains. These soils are medium textured throughout the profile. They
are not affected by salt and sodium and are rarely flooded.

The nearly level, well drained Wholan and similar soils are on inset fans of beach plains. These soils are medium textured throughout the profile. They are not affected by salt and sodium in the upper part, but they are slightly affected by salt in the lower part. They are rarely flooded.

Of minor extent in this unit are Allor, Misad, Bubus, and similar soils. Allor and similar soils are gently sloping or moderately sloping and are on fan piedmont remnants. They are moderately fine textured and are not affected by salt and sodium. They support Indian ricegrass and Wyoming big sagebrush. Misad and similar soils are gently sloping and are on offshore bars. They are very gravelly and medium textured and are slightly affected by salt and sodium. They support bottlebrush squirreltail, shadscale, and bud sagebrush. Bubus and similar soils are nearly level and are on the lower fan skirts. They are medium textured and are slightly to strongly affected by salt and sodium. They support bottlebrush squirreltail, shadscale, and black greasewood. All of the minor soils are well drained, and none is subject to flooding.

This unit is used for livestock grazing or wildlife habitat.

Areas Dominated By Soils on Piedmont Slopes and Adjacent Fan Skirts

Six map units are in this group. They make up about 37 percent of the survey area.

8. Ricert-Orovada-Tenabo

Gently sloping and moderately sloping, shallow and very deep, well drained soils; on fan piedmont remnants, fan skirts, and inset fans of lower piedmont slopes

This map unit is in the Antelope, Big Smoky, Grass, Reese River, and Smith Creek Valleys. The vegetation is mainly bottlebrush squirreltail, Indian ricegrass, shadscale, and bud sagebrush on the Ricert and Tenabo soils and bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush on the Orovada soils.

This unit makes up about 6 percent of the survey area.

The gently sloping or moderately sloping, very deep Ricert and similar soils are on the lower fan piedmont remnants. The upper layer of these soils is thin, light colored, and medium textured. The next layer is moderately fine textured and is moderately affected by sodium. The lower layer is very gravelly and moderately coarse textured. It is slightly affected by salt and strongly affected by sodium.

The gently sloping or moderately sloping, very deep Orovada and similar soils are on fan skirts and inset fans. The upper layer of these soils is thin and moderately coarse textured. Below this is dominantly stratified, moderately coarse textured and medium textured material that is slightly to moderately affected by salt.

The gently sloping, shallow Tenabo and similar soils are on the higher fan piedmont remnants. The upper layer of these soils is thin, light colored, and medium textured. The next layer is moderately fine textured
material that is slightly or moderately affected by sodium. Below this is an indurated hardpan.

Of minor extent in this unit are Broyles, Hessing, Allor, and similar soils. Broyles, Hessing, and similar soils are very deep, well drained, and medium textured. They are nearly level or gently sloping and are on the lower inset fans and the margins of fan skirts. They are slightly affected by salt and sodium in the upper part and are slightly to moderately affected by salt and moderately to strongly affected by sodium in the lower part. They support bottlebrush squirreltail, Indian ricegrass, and shadscale. Allor and similar soils are very deep and well drained. They are gently sloping or moderately sloping and are on the higher fan piedmont remnants. They are moderately fine textured over very gravelly material in the lower part. They are not affected by salt and sodium. They support bottlebrush squirreltail and black sagebrush. None of the minor soils is subject to flooding.

This unit is used for livestock grazing or wildlife habitat.

9. Muni-Glyphs-Orovada

Nearly level to moderately sloping, shallow and very deep, well drained soils; on fan piedmont remnants and fan skirts

This map unit is in the southern part of the survey area, flanking the sides of the Monitor Valley and in small areas in the Reese River Valley. The vegetation is mainly bluegrass, Indian ricegrass, needlegrass, and Wyoming big sagebrush.

This unit makes up about 10 percent of the survey area.

The gently sloping or moderately sloping, shallow Muni and similar soils are on fan piedmont remnants. These soils have a thin, medium textured upper layer. Below this is gravelly, medium textured to moderately fine textured material over a strongly silica-cemented hardpan. The soils are not affected by salt and sodium.

The gently sloping or moderately sloping, very deep Glyphs and similar soils are on broad fan piedmont remnants. The upper layer of these soils is thin, gravelly, and medium textured. The next layer is gravelly and moderately fine textured. The lower layer is gravelly and moderately coarse textured or medium textured. The soils are not affected by salt and sodium.

The nearly level or gently sloping, very deep Orovada and similar soils are on fan skirts. The upper part of these soils is thin and medium textured. Below this is moderately coarse or medium textured material that is slightly affected by salt.

Of minor extent in this unit are Broyles and similar soils and Unius and similar soils. Broyles and similar soils are very deep, moderately coarse textured, and nearly level and are on the margins of the lower fan skirts. They support bottlebrush squirreltail, Indian ricegrass, shadscale, and bud sagebrush. They are slightly or moderately affected by salt and sodium. Unius and similar soils are shallow and moderately sloping and are on fan piedmont remnants. They are moderately coarse textured over a strongly silica-cemented hardpan. They support needleandthread, bluegrass, Indian ricegrass, and black sagebrush. They are not affected by salt and sodium.

This unit is used for livestock grazing or wildlife habitat.

10. Glyphs-Orovada-Zineb

Gently sloping and moderately sloping, very deep, well drained soils; on fan piedmont remnants, fan skirts, and fan aprons

This map unit is on the eastern side of the Reese River Valley. The vegetation is mainly Indian ricegrass, bluegrass, and Wyoming big sagebrush.

This unit makes up about 4 percent of the survey area.

The gently sloping or moderately sloping Glyphs and similar soils are on broad fan piedmont remnants. The upper layer of these soils is thin, gravelly, and medium textured. The next layer is moderately fine textured. The lower layer is gravelly and moderately coarse textured or medium textured. The soils are not affected by salt and sodium.

The gently sloping Orovada and similar soils are on fan skirts. The upper layer of these soils is thin and moderately coarse textured. Below this is dominantly stratified, moderately coarse textured and medium textured material that is slightly affected by salt.

The gently sloping Zineb and similar soils are on fan aprons. The upper layer of these soils is light colored, gravelly, and moderately coarse textured. Below this is dominantly stratified, very gravelly and extremely gravelly, moderately coarse textured and medium textured material. The soils are not affected by salt and sodium.

Of minor extent in this unit are Desatoya and similar soils and Jesse Camp and similar soils. Desatoya and similar soils are very deep and well drained and are on the highest fan piedmont remnants. They are thin, light colored, gravelly, and medium textured in the upper layer; thin and fine textured in the next layer; and very gravelly and moderately coarse textured in the lower layer. They support Indian ricegrass, needleandthread, and black sagebrush. Jesse Camp and similar soils are very deep and well drained. They are nearly level and are on inset fans near the front of mountains. They are
coarse textured or medium textured throughout the profile and are very gravelly in some areas. They are rarely flooded. They support basin wildrye, bluegrass, and basin big sagebrush.

This unit is used for livestock grazing or wildlife habitat.

11. Spike-Pula-Desatoya

气息 ramp to steep, very deep, well drained soils; on fan piedmont remnants and partial ballenas

This map unit is in the north-central part of the survey area, in the Reese River Valley. The vegetation is mainly Indian ricegrass, galleta, Wyoming big sagebrush, and shadscale on the Spike soils; Indian ricegrass, needleandthread, and Wyoming big sagebrush on the Pula soils; and Indian ricegrass, needleandthread, and black sagebrush on the Desatoya soils.

This unit makes up about 3 percent of the survey area.

The steep Spike and similar soils are on south-facing side slopes of deeply incised fan piedmont remnants and partial ballenas. The upper layer of these soils is thin, very gravelly, and moderately coarse textured. The next layer is very gravelly and moderately fine textured. The lower layer is extremely gravelly and moderately coarse textured. These soils are slightly to moderately affected by salt and slightly affected by sodium below the upper layer.

The moderately steep or steep Pula and similar soils are on concave, north-facing side slopes of fan piedmont remnants. The upper layer of these soils is thin, very gravelly, and medium textured. The next layer is very gravelly and fine textured. The lower layer is very gravelly and medium textured. The soils are not affected by salt and sodium.

The strongly sloping to steep Desatoya and similar soils are on summits and convex side slopes of fan piedmont remnants. The upper layer of these soils is thin, gravelly, and medium textured. The next layer is thin and fine textured. The lower layer is very gravelly and moderately coarse textured or medium textured. It is slightly or moderately affected by salt.

Of minor extent in this unit are Grassval, Buffaran, Orovada, and similar soils. Grassval and similar soils are gently sloping and shallow and are on the lower summits of fan piedmont remnants. They are moderately fine textured in the lower part over a thick, indurated hardpan. They support Indian ricegrass, bluegrass, and Wyoming big sagebrush. Orovada and similar soils are gently sloping and very deep and are on inset fans. They are gravelly and medium textured throughout the profile. They support Indian ricegrass, needlegrass, bluegrass, and big sagebrush.

This unit is used for livestock grazing or wildlife habitat.

12. Grassval-Oxcorel-Allor

Gently sloping to strongly sloping, shallow and very deep, well drained soils; on fan piedmont remnants

This map unit is at the southern end of the Grass Valley and in the alluvial divide between the Simpson Park Mountains and the Tuquima Range. The vegetation is mainly Indian ricegrass, bluegrass, and black sagebrush on the Grassval soils; bottlebrush squirreltail, Indian ricegrass, shadscale, and bud sagebrush on the Oxcorel soils; and Thurber needlegrass, bluegrass, and Wyoming big sagebrush on the Allor soils.

This unit makes up about 5 percent of the survey area.

The gently sloping to strongly sloping, shallow Grassval and similar soils are on the higher fan piedmont remnants. The upper part of these soils is thin, light colored, and medium textured. Below this is moderately fine textured material over an indurated hardpan. The soils are not affected by salt and sodium.

The gently sloping or moderately sloping, very deep Oxcorel and similar soils are on the lower fan piedmont remnants. The upper part of these soils is thin, light colored, and medium textured. The next layer is fine textured and is slightly affected by salt and moderately affected by sodium. The lower layer is very gravelly and moderately coarse textured or medium textured. It is strongly affected by salt and sodium.

The gently sloping to strongly sloping, very deep Allor and similar soils are on fan piedmont remnants. The upper layer of these soils is thin, gravelly, and medium textured. The next layer is gravelly and moderately fine textured. The lower layer is gravelly and moderately coarse textured or medium textured. The soils are not affected by salt and sodium.

Of minor extent in this unit are Tenabo, Broyles, Orovada, and similar soils. Tenabo and similar soils are shallow and well drained and are on fan piedmont remnants. The lower part of these soils is moderately fine textured material that is sodium affected over an indurated hardpan. Tenabo and similar soils support bottlebrush squirreltail, shadscale, and bud sagebrush. Broyles and similar soils are very deep, well drained, and medium textured. They are nearly level and are on
slightly convex fan skirts. They are slightly affected by salt and sodium. They support Indian ricegrass, shadscale, and bud sagebrush. Orovala and similar soils are very deep, well drained, and medium textured. They are gently sloping and are on inset fans. They are rarely flooded and are not affected by salt and sodium. They support Thurber needlegrass, bluebunch wheatgrass, and Wyoming big sagebrush.

This unit is used for livestock grazing or wildlife habitat.

13. Buffaran-Allor-Chiara

Gently sloping to strongly sloping, shallow and very deep, well drained soils; on fan piedmont remnants and ballenas

This map unit is mainly in the Smith Creek Valley and in the alluvial divide between the Shoshone and New Pass Mountains, but small areas are in the Antelope, Grass, and Reese River Valleys. The vegetation is mainly bluegrass, Indian ricegrass, Thurber needlegrass, and Wyoming big sagebrush.

This unit makes up about 9 percent of the survey area.

The gently sloping or moderately sloping, shallow Buffaran and similar soils are on the higher summits of fan piedmont remnants and ballenas. The upper layer of these soils is thin, light colored, stony, and medium textured. Below this is fine textured material over an indurated hardpan. The soils are not affected by salt and sodium.

The gently sloping to strongly sloping, very deep Allor and similar soils are on the broad, lower fan piedmont remnants. The upper layer of these soils is thin, gravelly, and medium textured. The next layer is gravelly and moderately fine textured. The lower layer is gravelly and moderately coarse textured or medium textured. The soils are not affected by salt and sodium.

The strongly sloping, shallow Chiara and similar soils are on shoulder slopes of fan piedmont remnants. These soils are light colored and medium textured over an indurated hardpan. They are not affected by salt and sodium.

Of minor extent in this unit are Filiran, Pineval, Oxcorel, and similar soils. Filiran and similar soils are nearly level and moderately deep. They are on broad, slightly concave fan piedmont remnants along Iowa Canyon. They have an upper layer that is thin and light colored. Below this is a thick layer of material that is slightly affected by salt and moderately affected by sodium over a strongly cemented hardpan. Pineval and similar soils are very deep, very gravelly, and moderately coarse textured or medium textured. They are nearly level or gently sloping and are on the lower

inset fans and fan skirts. They are not affected by salt and sodium. They support bottlebrush squiretaile, Indian ricegrass, and Wyoming big sagebrush. Oxcorel and similar soils are very deep and gently sloping. They are on dissected, convex fan piedmont remnants. They have an upper layer that is thin, light colored, and medium textured. The next layer is fine textured and moderately affected by sodium. The lower layer is slightly affected by salt and strongly affected by sodium. Oxcorel and similar soils support Indian ricegrass, shadscale, and bud sagebrush.

This unit is used for livestock grazing or wildlife habitat.

Areas Dominated by Soils On Foothills and Low Mountains

Four map units are in this group. They make up about 15 percent of the survey area.

14. Tessfive-Puett-Genaw

Gently sloping to moderately steep, shallow, well drained soils; on foothills and rock pediments

This map unit is in small areas in the northern part of the Reese River Valley. The vegetation is mainly Indian ricegrass, Thurber needlegrass, and black sagebrush on the Tessfive soils; Indian ricegrass, black sagebrush, and Wyoming big sagebrush on the Puett soils; and bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush on the Genaw soils.

This unit makes up about 2 percent of the survey area.

The gently sloping to moderately steep Tessfive and similar soils are on convex summits, shoulder slopes, and side slopes of rolling foothills. These soils are gravelly and medium textured over semi-consolidated sedimentary rock.

The strongly sloping or moderately steep Puett and similar soils are on eroded, convex side slopes of rolling foothills. These soils are light colored and medium textured over soft, semi-consolidated sedimentary rock.

The moderately steep Genaw and similar soils are on concave side slopes of rock pediments. The upper layer of these soils is thin, gravelly, and medium textured. Below this is gravelly, medium textured or moderately fine textured material over soft, semi-consolidated sedimentary rock.

Of minor extent in this unit are Atilow, Koynik, Perlor, and similar soils. Atilow and similar soils are shallow, very gravelly, and medium textured. They are on stable summits of rolling foothills. They support Indian ricegrass, Sandberg bluegrass, and black sagebrush. Koynik and similar soils are shallow and medium textured over interbedded hard limestone and Tertiary
sediment. They are on concave side slopes of foothills. They support Sandberg bluegrass and Utah juniper. Perfor and similar soils are shallow and medium textured. They are on the lower summits of rolling foothills. They support Indian ricegrass, shadscale, and bud sagebrush.

This unit is used for livestock grazing or wildlife habitat.

15. Old Camp-Colbar-Newpass

Strongly sloping to steep, shallow and moderately deep, well drained soils; on foothills

This map unit is in the northwestern part of the survey area, in the New Pass and Shoshone Mountains. The vegetation is mainly pine bluegrass, Thurber needlegrass, and Wyoming big sagebrush. This unit makes up about 3 percent of the survey area.

The moderately steep or steep, shallow Old Camp and similar soils are on foothills. These soils are thin, very gravelly and very cobbly, medium textured material over hard bedrock. They are not affected by salt and sodium.

The moderately steep, moderately deep Colbar and similar soils are on the lower north- and east-facing side slopes of foothills. The upper layer of these soils is thin, very cobbly, and medium textured. Below this is gravelly, moderately fine textured material over hard bedrock. The soils are not affected by salt and sodium.

The strongly sloping, moderately deep Newpass and similar soils are on summits and the higher north- and east-facing side slopes of foothills. The upper layer of these soils is thin, very gravelly, and medium textured. The next layer is fine textured and is slightly affected by sodium. Below this is a thin, strongly cemented hardpan over hard bedrock.

Of minor extent in this unit are Laped and similar soils, Old Camp and similar soils, and Rock outcrop. Laped and similar soils are shallow, very gravelly, and medium textured. They are steep and are on concave side slopes of mountains. They support bluebunch wheatgrass, mountain big sagebrush, singleleaf pinyon, and Utah juniper. Old Camp and similar soils are shallow, very gravelly, and medium textured or moderately fine textured. They are moderately sloping to moderately steep and are on the lower summits and convex side slopes of mountains. They support pine bluegrass, Thurber needlegrass, and Wyoming big sagebrush. Rock outcrop occurs as scattered barren peaks.

This unit is used for livestock grazing or wildlife habitat.

16. Jung-Newpass

Strongly sloping and moderately steep, shallow and moderately deep, well drained soils; on foothills

This map unit is in the central Shoshone Mountains. The vegetation is mainly pine bluegrass, Thurber needlegrass, and black sagebrush on the Jung soils and pine bluegrass, Thurber needlegrass, and Wyoming big sagebrush on the Newpass soils.

This unit makes up about 4 percent of the survey area.

The strongly sloping and moderately steep, shallow Jung and similar soils are on rounded, convex summits and south- and west-facing side slopes of rolling foothills. The upper layer of these soils is thin, very cobbly, and medium textured. Below this is very cobbly, fine textured material over hard bedrock. The soils are not affected by salt and sodium.

The moderately steep, moderately deep Newpass and similar soils are on north- and east-facing side slopes of rolling foothills. The upper layer of these soils is thin, very gravelly, and medium textured. The next layer is fine textured and is slightly affected by sodium. Below this is a thin, strongly cemented hardpan over hard bedrock.

Of minor extent in this unit are Itca and similar soils, Old Camp and similar soils, and Rock outcrop. Itca and similar soils are shallow, very gravelly, and medium textured. They are steep and are on concave side slopes of mountains. They support bluebunch wheatgrass, mountain big sagebrush, singleleaf pinyon, and Utah juniper. Old Camp and similar soils are shallow, very gravelly, and medium textured or moderately fine textured. They are moderately sloping to moderately steep and are on the lower summits and convex side slopes of mountains. They support pine bluegrass, Thurber needlegrass, and Wyoming big sagebrush. Rock outcrop occurs as scattered barren peaks.

This unit is used for livestock grazing or wildlife habitat.

17. Akerue-Simpark-Punchbowl

Gently sloping to moderately steep, shallow, well drained soils; on low mountains

This map unit is in the Simpson Park Mountains and the northeastern part of the Toiyabe Range. The vegetation is mainly Indian ricegrass, needleandthread, and black sagebrush.

This unit makes up about 6 percent of the survey area.

The moderately steep Akerue and similar soils are on shoulder slopes and upper side slopes of low mountains. The upper layer of these soils is very stony and medium textured. The next layer is very cobbly and fine textured. Below this is a thin, indurated hardpan over bedrock.

The gently sloping to moderately steep Simpark and similar soils are on the broad upper summits and the
lower side slopes of low mountains. The upper layer of these soils is very stony and moderately coarse textured. The next layer is very cobbly and medium textured. Below this is an indurated hardpan over bedrock.

The strongly sloping Punchbowl and similar soils are on the lower summits and shoulder slopes of low mountains above rimrock. The upper layer of these soils is thin, very gravelly or extremely stony, and medium textured. Below this is gravelly, medium textured material over hard bedrock.

Of minor extent in this unit are Robson and similar soils, Rock outcrop, Duco and similar soils, and Nobuck and similar soils. Robson and similar soils are shallow, very cobbly, and fine textured. They are on north-facing shoulder slopes of mountains. They support Thurber needlegrass, bluegrass, and low sagebrush. Rock outcrop occurs as rimrock along shoulder slopes of mountains and as cliffs on eroded side slopes of mountains. Areas of Rock outcrop are barren. Duco and similar soils are shallow, very gravelly, and medium textured. They are moderately sloping to steep and are on crests of mountains. They support pine bluegrass, mountain big sagebrush, singleleaf pinyon, and Utah juniper. Nobuck and similar soils are moderately deep, very gravelly, and medium textured. They are on steep, north-facing side slopes of mountains in areas where snow accumulates. They support bluebunch wheatgrass, bluegrass, and big sagebrush.

This unit is used mainly for livestock grazing or wildlife habitat.

Areas Dominated by Soils On Mountains

Three map units are in this group. They make up about 19 percent of the survey area.

18. Itca-Reluctan-Torro

Moderately steep and steep, shallow, moderately deep, and very deep, well drained soils; on mountains

This map unit is in all of the mountain ranges in the survey area. The vegetation is mainly bluegrass, mountain big sagebrush, and singleleaf pinyon on the Itca soils and bluebunch wheatgrass, Idaho fescue, and mountain big sagebrush on the Reluctan and Torro soils.

This unit makes up about 9 percent of the survey area.

The moderately steep or steep, shallow Itca and similar soils are on convex crests and mainly the east-facing and higher south- and west-facing side slopes of mountains. The upper layer of these soils is thick, dark, very cobbly, and medium textured. Below this is very gravelly, fine textured material over hard bedrock.

The moderately steep or steep, moderately deep Reluctan and similar soils are on the higher, concave, north- and east-facing side slopes of mountains. The upper layer of these soils is thick, dark, very gravelly or very cobbly, and medium textured. Below this is gravelly, moderately fine textured material over hard bedrock.

The steep, very deep Torro and similar soils are on concave, west- and south-facing side slopes of mountains. The upper layer of these soils is thick, dark, very gravelly or extremely gravelly, and medium textured. The lower layer is extremely gravelly and medium textured or moderately fine textured.

Of minor extent in this unit are Walti, Clanalpine, Roca, and similar soils, Rock outcrop, and Welch and similar soils. Walti and similar soils are moderately deep, fine textured, and moderately sloping. They are on crests of mountains. They support Idaho fescue, bluebunch wheatgrass, and low sagebrush. Clanalpine and similar soils are moderately deep, very gravelly, and moderately fine textured. They are on the highest north- and west-facing shoulder slopes and side slopes of mountains below areas of Rock outcrop. They support Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, and singleleaf pinyon. Roca and similar soils are moderately deep, very gravelly, and fine textured. They are steep and are on the concave, lower, south-facing side slopes of mountains. They support bluegrass, bluebunch wheatgrass, and Wyoming big sagebrush. Rock outcrop occurs as rimrock along shoulder slopes of mountains, as cliffs along canyon walls, and as scattered peaks. Areas of Rock outcrop are barren. Welch and similar soils are nearly level to gently sloping and are in intermountain drainageways and riparian areas. They support basin wildrye and basin big sagebrush in areas where the channel has been subject to entrenchment and bluegrass, hairgrass, rush, and sedges in undrained areas.

This unit is used for livestock grazing or wildlife habitat.

19. Walti-Softscabble-Zoesta

Strongly sloping and moderately steep, moderately deep and very deep, well drained soils; on high mountains

This map unit is in the Simpson Park Mountains and the Toiyabe Range. The vegetation is mainly Idaho fescue, bluebunch wheatgrass, and low sagebrush on the Walti and Zoesta soils and bluebunch wheatgrass, Idaho fescue, and mountain big sagebrush on the Softscabble soils.

This unit makes up about 5 percent of the survey area.

The moderately deep Walti and similar soils are on
convex crests and shoulder slopes of high mountains. The upper layer of these soils is thick, very cobbly, and medium textured. Below this is fine textured material over hard bedrock.

The very deep Softscrabble and similar soils are on concave, north- and east-facing side slopes of high mountains. The upper layer of these soils is very thick, dark, very gravelly, and medium textured. The next layer is very gravelly or very cobbly and moderately fine textured. The lower layer is very gravelly or very cobbly and moderately coarse textured or medium textured.

The very deep Zoesta and similar soils are on south- and west-facing side slopes of high mountains. The upper layer of these soils is thin, cobbly, and medium textured. The lower layer is very thick and fine textured.

Of minor extent in this unit are Sumine and similar soils, Atlow and similar soils, Rock outcrop, Colbar and similar soils, and Welch and similar soils. Sumine and similar soils are moderately deep, very gravelly, and moderately fine textured. They are steep and are on south-facing side slopes of mountains. They support bluebunch wheatgrass and mountain big sagebrush. Atlow and similar soils are shallow, gravelly, and moderately fine textured. They are moderately sloping and are on the lower crests of mountains. They support bluegrass, bottlebrush squirreltail, and black sagebrush. Rock outcrop occurs on mountains as rimrock on eroded shoulder slopes, cliffs on side slopes, and scattered peaks. Areas of Rock outcrop are barren. Colbar and similar soils are moderately deep and moderately fine textured. They are moderately steep or steep and are on the lower side slopes of mountains. They support Thurber needlegrass, bluebunch wheatgrass, and Wyoming big sagebrush. Welch and similar soils are nearly level to gently sloping and are in intermountain drainageways and riparian areas. They support basin wildrye and basin big sagebrush in areas where the channel has been subject to entrenchment and bluegrass, hairgrass, rush, and sedges in undrained areas.

This unit is used for livestock grazing or wildlife habitat.

20. Packer-Hapgood-Sumine

*Moderately steep to very steep, moderately deep and very deep, well drained soils; on high mountains*

This map unit is in the Desatoya, New Pass, Shoshone, and Simpson Park Mountains and the Toiyabe Range. The vegetation is mainly Idaho fescue, Webber ricegrass, low sagebrush, and black sagebrush on the Packer soils; Idaho fescue, bluebunch wheatgrass, and snowberry on the Hapgood soils; and bluebunch wheatgrass, basin wildrye, and mountain big sagebrush on the Sumine soils.

This unit makes up about 5 percent of the survey area.

The moderately steep to very steep, very deep Packer and similar soils are on convex crests and nose slopes of high mountains. The upper layer of these soils is very gravelly and medium textured. The lower layer is very gravelly and medium textured or moderately fine textured.

The steep or very steep, very deep Hapgood and similar soils are on concave, north-facing side slopes of high mountains. The upper layer of these soils is very thick, dark, very gravelly, and medium textured. The lower layer is very gravelly or very cobbly and medium textured.

The steep, moderately deep Sumine and similar soils are on south-facing side slopes of mountains. The upper layer of these soils is thick, dark, very gravelly, and medium textured. Below this is very gravelly, moderately fine textured material over hard bedrock.

Of minor extent in this unit are Layview and similar soils, Hatur and similar soils, Rock outcrop, and Welch and similar soils. Layview and similar soils are shallow and moderately fine textured. They are on convex crests of mountains. They support Idaho fescue, bluebunch wheatgrass, black sagebrush, and low sagebrush. Hatur and similar soils are moderately deep, very gravelly, and medium textured. They are on side slopes of mountains below limestone rock outcroppings. They support bluebunch wheatgrass, Idaho fescue, and mountain big sagebrush. Rock outcrop occurs as exposed bedrock on shoulder slopes and cliffs, along canyon walls, and on scattered peaks of mountains. Welch and similar soils are very deep, poorly drained, and moderately fine textured. They are along canyon bottoms and adjacent to seeps and springs. They are flooded for short periods late in spring. They support basin wildrye, bluegrass, and basin big sagebrush.

This unit is used mainly for livestock grazing or wildlife habitat.

**Broad Land Use Considerations**

The soils in this survey area vary widely in their potential for major land uses, such as cropland, pasture, rangeland, wildlife habitat, and urbanization. Extensive changes in land use are not expected in the foreseeable future.

About 98 percent of the land area is used for range and related uses. Careful management of this land is needed. General soil map unit 3 has the highest potential to produce forage; however, because it is near
a water source and supports more palatable plants, it also has the potential to be overused, resulting in deterioration of the range. Map unit 2 and units 4 through 14 are used extensively for range. The main limitation is inadequate precipitation. Some of the soils in these units have a hardpan or bedrock, which limits the rooting depth and the available water capacity, and some have rock fragments on the surface, which hinder mechanical operations. Map units 15 through 20 are well suited to use as range; however, mechanical operations are hindered in most areas by the slope and by the rock fragments on the surface. The rooting depth is limited in some of the soils in units 15 through 19.

About 1 percent of the land in the survey area is used as irrigated cropland, and about 18 percent more would be suitable for use as cropland if irrigation water were available. The main crops are alfalfa hay, alfalfa for seed, improved grass-legume forage, and small grain, such as barley, wheat, and oats. Small areas in units 3 through 7 are used as cropland. The soils in unit 3 are limited by a high water table and a hazard of flooding. The soils in the other units are limited mainly because water is not available for irrigation.

Most of the irrigation water in the survey area must be pumped from wells, and sources of water are not easily found. The Duric Camborthids in unit 5, Typic Camborthids in units 5 through 7, and Durixerollic Camborthids in units 6 and 7 are well suited to climatically adapted plants. The selection of plants is limited by the short growing season. Most areas of the soils in these map units have potential for growing irrigated crops if the content of salts and sodium is controlled. Some of the sloping soils in units 6 and 7 are limited by a hazard of erosion or by low available soil moisture.

Less than 1 percent of the land in the survey area is used for pasture and meadow hay. Map unit 3 is used extensively for pasture and meadow hay, and most areas of the unit are well suited to these uses. Some areas of this unit are limited by the content of salts and sodium.

Almost all of the land in the survey area is used by one or more kinds of wildlife. The perennial streams along the Reese River support catfish, black bass, and carp. Several of the streams and small ponds in the area support trout.

The openland wildlife species common to the area include deer, valley quail, cottontail, meadowlark, and killdeer. Map units 2 and 3 are used extensively by these species. The availability of water and the food and cover provided by the native meadows and pastures in these units are attractive to wildlife. Irrigated areas of units 4 through 7 also are used extensively by openland wildlife. Watering facilities need to be provided when these areas are not being irrigated. Fencerows, ditchbanks, and odd corners can be planted with suitable plants to improve the habitat. Adjacent areas of rangeland provide additional cover.

The wetland wildlife species common to the area include ducks, geese, herons, muskrat, and beaver. Map unit 3 is used extensively by these species. Shallow water areas can be established in the nearly level areas of this unit, but the more sloping areas are limited for this use. Some areas of this unit have been drained by stream entrenchment and thus provide limited habitat for wetland wildlife.

The rangeland wildlife species common to the area include antelope, mule deer, jackrabbit, chukar, and sage grouse. Map units 6 through 8 and 10 through 13 are used extensively by these species. The native plant community in many areas is limited by low precipitation. Proper design and placement of watering facilities are beneficial.
Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and limitations of a soil for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some included areas that belong to other taxonomic classes.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to precisely define and locate the soils and miscellaneous areas.

The detailed soil map units identified within the survey area reflect various relationships of soils with component parts of the landscape. These relationships are illustrated in figures 6 and 7. These figures indicate, in a three-dimensional representation, the soil-physiographic relationships typical of the area.

Figure 6 illustrates how some of the map unit delineations appear throughout the various segments of the landscape.

Each map unit has one or more major soils or miscellaneous areas and generally has several contrasting inclusions. Figure 7 illustrates the physiographic positions of the major components in a few typical map units.

The unique physiographic position of each soil or miscellaneous area identified is given in the map unit descriptions.

Soils that have profiles that are almost alike make up a soil series. The soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of one series can differ in texture of the upper layer or of the underlying layers. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Kelk silt loam, saline, is a phase of the Kelk series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called complexes or associations.

A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Beoska-Tenabo complex is an example.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Akerue-Simpark-Punchbowl association is an example.

This survey includes miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. Playas is an example.

The detail of mapping was selected to meet the anticipated long-term use of the survey, and the map
units were designed to meet the needs for that use. Table 4 gives the acreage and proportionate extent of each map unit.

The following paragraphs explain some of the headings used in the map unit descriptions. Some of the terms used in the descriptions are defined in the Glossary. More information is given in the sections "Use and Management of the Soils" and "Soil Properties."

The landscape position is described for the entire map unit. These descriptions generally are broader than those given for each major component.

Composition includes the components identified in the name of the map unit as well as the contrasting inclusions. Inclusions are areas of soils or miscellaneous areas for which the unit is named. Inclusions can be either similar or contrasting. Similar inclusions are components that differ from the components for which the unit is named but that for purposes of use and management can be considered comparable to the named components. In the "Composition" section, a single percentage is provided for a named soil and the similar inclusions because their use and management are similar. Contrasting inclusions are components that differ so significantly from the components for which the unit is named that they would have different use and management if they were extensive enough to be managed separately. For most uses, contrasting inclusions have a limited effect on use and management. Inclusions generally are in small areas, and they could not be mapped separately because of the scale used. Some small areas of strongly contrasting inclusions are identified by a special symbol on the detailed soil maps. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the inclusions on the landscape.

A description of the characteristics of the soils in the map unit follows the description of the composition. The
major uses, ratings for various uses, restrictive features for various practices, and interpretive groups also are shown.

Map Unit Descriptions

120—Akerue-Simpark-Robson association

*Positions on landscape:* Foothills

**Composition**

*Major components:*
Akerue very stony loam, 15 to 30 percent slopes—40 percent
Simpark very stony loam, 15 to 50 percent slopes—35 percent
Robson very cobbly loam, 8 to 30 percent slopes—10 percent

*Contrasting inclusions:*
Lithic Xeric Torriorthents, loamy, mixed, frigid, 15 to 75 percent slopes—5 percent
Aridic Argixerolls, fine-loamy, mixed, frigid, 8 to 15 percent slopes—5 percent

*Rock outcrop*—3 percent
*Rubble land*—2 percent

**Characteristics of the Akerue Soil**

*Classification:* Xerolic Durargids, clayey-skeletal, montmorillonitic, frigid, shallow
*Positions on landscape:* Smooth to convex, south- and west-facing side slopes of foothills
*Parent material:* Residuum derived from andesite, rhyolite, and quartzite
*Slope:* 15 to 30 percent
*Elevation:* 6,200 to 7,000 feet
*AVERAGE ANNUAL PRECIPITATION:* About 10 inches
*AVERAGE ANNUAL AIR TEMPERATURE:* About 44 degrees F
*Frost-Free Season:* About 90 days
*Dominant present vegetation:* Black sagebrush, needleandthread, Indian ricegrass

**Typical Profile**

*Rock fragments on surface:* 35 percent cobbles and stones, 35 percent pebbles
*Depth:* 0 to 3 inches
*Texture:* Very stony loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 15 inches
Texture: Very cobbly clay loam, very cobbly clay
Structure: Angular blocky
Consistency: Hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 15 to 21 inches
Material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 21 inches
Material: Unweathered bedrock

**Soil and Water Features**
Depth to the hardpan: 14 to 20 inches
Depth to bedrock: 15 to 26 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.0 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

**Characteristics of the Simpark Soil**
Classification: Xerolic Durargids, loamy-skeletal, mixed, frigid, shallow
Positions on landscape: Smooth to slightly concave, east-facing and lower north-facing side slopes of foothills
Parent material: Residuum that is derived from volcanic rock and includes volcanic ash
Slope: 15 to 50 percent
Elevation: 6,200 to 6,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Black sagebrush, Indian ricegrass, bottlebrush squirreltail

**Typical Profile**
Rock fragments on surface: 15 percent cobbles and stones, 35 percent pebbles

Depth: 0 to 13 inches
Texture: Very stony loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 13 to 18 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 18 to 22 inches
Material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 22 inches
Material: Unweathered bedrock

**Soil and Water Features**
Depth to the hardpan: 14 to 20 inches
Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.5 to 1.8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Robson Soil**
Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex summits and higher north-facing side slopes of foothills
Parent material: Residuum derived from siliceous tuff, rhyolite, and andesite
Slope: 8 to 30 percent
Elevation: 6,500 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Low sagebrush, Sandberg bluegrass

**Typical Profile**
Depth: 0 to 2 inches
Texture: Very cobbly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Depth: 2 to 5 inches
Texture: Very cobbly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 5 to 15 inches
Texture: Very cobbly clay, extremely cobbly clay
Structure: Angular blocky
Consistency: Hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 15 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 0.6 to 1.2 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Lithic Xeric Torriorthents, loamy, mixed, frigid
Positions on landscape: Convex nose slopes of foothills
Distinctive present vegetation: Black sagebrush, low sagebrush, bluegrass

Inclusion 4
Positions on landscape: Rock stripes below Rock outcrop
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Akerue Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Simpark Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Robson Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Akerue Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, cemented pan, too clayey
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, cemented pan
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Simpark Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—cemented pan, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, cemented pan
Local roads and streets: Severe—cemented pan, slope
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Robson Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Interpretive Groups
Land capability classification: Akerue, Simpark, and Robson soils—VIIa, nonirrigated
Range site: Akerue and Simpark soils—028B016N; Robson soil—028B045N; Inclusion 1—028B038N; Inclusion 2—028B007N; Inclusions 3 and 4—none

121—Akerue-Simpark-Punchbowl association

Positions on landscape: Foothills

Composition

Major components:
Akerue very cobbly loam, 15 to 30 percent slopes—40 percent
Simpark very cobbly loam, 15 to 30 percent slopes—25 percent
Punchbowl gravelly loam, 8 to 15 percent slopes—20 percent
Contrasting inclusions:
Robson very cobbly loam, 30 to 50 percent slopes—7 percent
Durixerolic Hapludargids, loamy-skeletal, mixed, frigid, 2 to 8 percent slopes—5 percent
Rock outcrop—3 percent

Characteristics of the Akerue Soil
Classification: Xerolic Durargids, clayey-skeletal, montmorillonitic, frigid, shallow
Positions on landscape: Convex to smooth, broad shoulder slopes and upper side slopes of foothills
Parent material: Residue derived from andesite, rhyolite, and quartzite
Slope: 15 to 30 percent
Elevation: 6,600 to 7,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, needleandthread, Indian ricegrass

Typical Profile
Rock fragments on surface: 35 percent cobbles, 35 percent pebbles
Depth: 0 to 3 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 15 inches
Texture: Very cobbly clay loam, very cobbly clay
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 15 to 21 inches
Material: Indurated hardpan
Structure: Massive
Consistence: Extremely hard, extremely firm
Depth: 21 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to bedrock: 15 to 26 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.0 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Simpark Soil
Classification: Xerolic Durargids, loamy-skeletal, mixed, frigid, shallow
Positions on landscape: Smooth to slightly concave, lower side slopes of foothills
Parent material: Residue that is derived from andesite and rhyolite and includes volcanic ash
Slope: 15 to 30 percent
Elevation: 6,200 to 6,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile
Rock fragments on surface: 40 percent cobbles, 20 percent pebbles
Depth: 0 to 13 inches
Texture: Very cobbly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 13 to 18 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 18 to 22 inches
Material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 22 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.5 to 1.8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Punchbowl Soil
Classification: Lithic Xerollic Haplargids, loamy, mixed, frigid
Positions on landscape: Convex narrow summits and shoulder slopes of foothills
Parent material: Residuum derived from andesite, dacite, and tuff
Slope: 8 to 15 percent
Elevation: 6,800 to 7,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile
Depth: 0 to 3 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 7 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 7 to 11 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 11 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.7 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Slightly concave, north-facing side slopes of foothills
Distinctive present vegetation: Low sagebrush, bluegrass

Inclusion 2
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, frigid
Positions on landscape: Drainageways and inset fans between foothills
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Inclusion 3
Positions on landscape: Rimrock on shoulder slopes of foothills
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Akerue Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Simpark Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Punchbowl Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Akerue Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, cemented pan, too clayey
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, cemented pan
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines

Simpark Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—cemented pan, slope, small stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, cemented pan, large stones
Local roads and streets: Severe—cemented pan, slope, large stones
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Punchbowl Soil
Range seeding: Poor—droughty, depth to rock
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Akerue, Simpark, and Punchbowl soils—VIIa, nonirrigated
Range site: Akerue, Simpark, and Punchbowl soils—028B016N; Inclusion 1—028B045N; Inclusion 2—028B010N; Inclusion 3—none

141—Unsel-Wardenot-Belted association

Positions on landscape: Piedmont slopes

Composition

Major components:
Unsel gravely fine sandy loam, 2 to 4 percent slopes—35 percent
Wardenot gravely fine sandy loam, 2 to 4 percent slopes—30 percent
Belted gravely fine sandy loam, 2 to 8 percent slopes—25 percent

Contrasting inclusions:
Haploxerolic Durargids, loamy, mixed, mesic, shallow, 2 to 4 percent slopes—7 percent
Durixerolic Haplargids, fine-loamy, mixed, mesic, 2 to 4 percent slopes—3 percent

Characteristics of the Unsel Soil

Classification: Duric Haplargids, fine-loamy, mixed, mesic

Positions on landscape: The lower fan piedmont remnants

Parent material: Mixed alluvium

Slope: 2 to 4 percent
Elevation: 5,700 to 5,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 51 degrees F
Frost-free season: About 130 days

Dominant present vegetation: Shadscale, Bailey greasewood, bottlebrush squirreltail, galleta

Typical Profile
Rock fragments on surface: 80 percent pebbles
Depth: 0 to 8 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 5 to 13

Depth: 8 to 18 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 5 to 13

Depth: 18 to 31 inches
Texture: Gravelly sandy clay loam
Structure: Subangular blocky
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 25

Depth: 31 to 60 inches
Texture: Very gravelly loamy sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.6 to 5.8 inches
Water-supplying capacity: 7 inches
Runoff: Medium or rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Wardenot Soil
Classification: Typic Torrifertents, sandy-skeletal, mixed, mesic
Positions on landscape: Fan skirts, inset fans
Parent material: Mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 51 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Shadscale, greasewood, bottlebrush squirreltail, gallota

Typical Profile
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 13

Depth: 5 to 60 inches
Texture: Stratified very gravelly fine sandy loam to extremely cobbly loamy sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 13

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately rapid
Available water capacity: 2.7 to 5.0 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: A
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Belted Soil
Classification: Haplic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: The higher fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,700 to 5,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 53 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Shadscale, Bailey greasewood, Indian ricegrass, gallota

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 13
Depth: 4 to 14 inches
Texture: Gravely clay loam
Structure: Granular
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 14 to 25 inches
Material: Cemented hardpan
Structure: Massive
Consistence: Very hard, very firm
Depth: 25 to 60 inches
Texture: Very gravelly sand
Structure: Single grain
Consistence: Loose
Reaction: Very strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 13

Soil and Water Features
Depth to the hardpan: 6 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.4 to 2.2 inches
Water-supplying capacity: 5 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Haploxerolic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: Fan drainageways of the higher fan piedmont remnants
Distinctive present vegetation: Black sagebrush, Indian ricegrass, shadscale

Inclusion 2
Classification: Durixerolic Haplargids, fine-loamy, mixed, mesic

Positions on landscape: Fan drainageways of the lower fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, Indian ricegrass, needleandthread

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Unsel Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Wardenot Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Belted Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Unsel Soil
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Wardenot Soil
Range seeding: Poor—too arid, droughty
Roadfill: Fair—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, large stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Belted Soil
Range seeding: Poor—too arid, droughty, cemented pan
Roadfill: Good
Topsoil: Poor—cemented pan, small stones, area reclaim
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Moderate—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

**Interpretive Groups**

Land capability classification: Unsel soil—Ile, irrigated, and VIIc, nonirrigated; Wardenot soil—IVe, irrigated, and VIIc, nonirrigated; Belted soil—VIIIs, nonirrigated

Range site: Unsel, Wardenot, and Belted soils—
029X017N; Inclusion 1—028B016N; Inclusion 2—028B010N

142—Unsel-Caphor-Chedehap association

**Positions on landscape:** Piedmont slopes

**Composition**

Major components:
Unsel gravelly fine sandy loam, 2 to 4 percent slopes—40 percent
Caphor fine sandy loam, 2 to 4 percent slopes—25 percent
Chedehap coarse sandy loam, 2 to 8 percent slopes—20 percent

Contrasting inclusions:
Batam silt loam, 0 to 2 percent slopes—7 percent
Creemon silt loam, 0 to 2 percent slopes—4 percent
Xeric Torriorthents, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—4 percent

**Characteristics of the Unsel Soil**

Classification: Duric Haplargids, fine-loamy, mixed, mesic

Positions on landscape: Fan piedmont remnants, nonburied fan remnants

Parent material: Mixed alluvium

Slope: 2 to 4 percent

Elevation: 5,700 to 5,900 feet

Average annual precipitation: About 7 inches
Average annual air temperature: About 51 degrees F
Frost-free season: About 130 days

Dominant present vegetation: Shadscale, Bailey

Greasewood, bottlebrush squirrelltail, galleta

**Typical Profile**

Rock fragments on surface: 80 percent pebbles

Depth: 0 to 8 inches

Texture: Gravelly fine sandy loam

Structure: Platy

Consistence: Slightly hard, very friable

Reaction: Strongly alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 5 to 13

Depth: 8 to 18 inches

Texture: Gravelly clay loam

Consistency: Hard, friable

Reaction: Strongly alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 5 to 13

Depth: 18 to 31 inches

Texture: Gravelly sandy clay loam

Consistency: Hard, friable

Reaction: Strongly alkaline

Salinity: 4 to 8 millimhos per centimeter

Sodicity (SAR): 13 to 25

Depth: 31 to 60 inches

Texture: Very gravelly loamy sand

* Soil and Water Features *

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderately slow

Available water capacity: 3.6 to 5.8 inches

Water-supplying capacity: 7 inches

Runoff: Medium

Hydrologic group: B

Erosion factors (upper layer): K value—0.20; T value—2;
wind erodibility group—4

Hazard of erosion: By water—slight; by wind—severe

Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Low

**Characteristics of the Caphor Soil**

Classification: Durorthid Torriorthents, coarse-loamy, mixed (calcareous), mesic

Positions on landscape: Fan skirts

Parent material: Mixed alluvium

Slope: 2 to 4 percent

Elevation: 5,700 to 5,800 feet

Average annual precipitation: About 7 inches

Average annual air temperature: About 49 degrees F

Frost-free season: About 120 days

Dominant present vegetation: Shadscale, Indian

Ricegrass, bottlebrush squirrelltail
Typical Profile

**Depth:** 0 to 7 inches
**Texture:** Fine sandy loam
**Structure:** Platy
**Consistency:** Soft, very friable
**Reaction:** Moderately alkaline
**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 7 to 17 inches
**Texture:** Sandy loam
**Structure:** Massive
**Consistency:** Slightly hard, very friable
**Reaction:** Strongly alkaline
**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 17 to 35 inches
**Texture:** Sandy loam
**Structure:** Massive
**Consistency:** Slightly hard, friable
**Reaction:** Strongly alkaline
**Salinity:** 0 to 2 millimhos per centimeter

**Sodicity (SAR):** 2 to 10

**Depth:** 35 to 60 inches
**Texture:** Gravelly coarse sand
**Structure:** Single grain
**Consistency:** Loose
**Reaction:** Strongly alkaline
**Salinity:** 0 to 4 millimhos per centimeter

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches
**Frequency of flooding:** None
**Permeability:** Moderately slow over very rapid
**Available water capacity:** 3.7 to 5.5 inches
**Water-supplying capacity:** 7 inches
**Runoff:** Slow
**Hydrologic group:** B

**Erosion factors (upper layer):** K value—0.24; T value—5; wind erodibility group—3
**Hazard of erosion:** By water—slight; by wind—severe

**Shrink-swell potential:** Low
**Corrosivity:** To steel—high; to concrete—low
**Potential for frost action:** Low

**Characteristics of the Chedehap Soil**

**Classification:** Xerollic Camborthids, coarse-loamy, mixed, mesic

**Positions on landscape:** Fan aprons

**Parent material:** Moderately coarse textured alluvium

**Slope:** 2 to 8 percent

**Elevation:** 5,700 to 5,800 feet

**Average annual precipitation:** About 8 inches

**Average annual air temperature:** About 51 degrees F

**Frost-free season:** About 120 days

**Dominant present vegetation:** Wyoming big sagebrush, spiny hopsage, needleandthread, bluegrass

**Typical Profile**

**Rock fragments on surface:** 30 percent pebbles

**Depth:** 0 to 5 inches
**Texture:** Coarse sandy loam
**Structure:** Subangular blocky
**Consistency:** Soft, very friable
**Reaction:** Mildly alkaline
**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 5 to 12 inches
**Texture:** Sandy loam
**Structure:** Subangular blocky
**Consistency:** Slightly hard, very friable
**Reaction:** Mildly alkaline
**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 12 to 37 inches
**Texture:** Sandy loam
**Structure:** Massive
**Consistency:** Slightly hard, friable
**Reaction:** Moderately alkaline
**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 37 to 60 inches
**Texture:** Loamy coarse sand
**Structure:** Single grain
**Consistency:** Loose
**Reaction:** Strongly alkaline
**Salinity:** 0 to 2 millimhos per centimeter

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches
**Frequency of flooding:** Rare
**Permeability:** Moderately rapid over very rapid
**Available water capacity:** 4.1 to 6.0 inches
**Water-supplying capacity:** 8 inches
**Runoff:** Slow
**Hydrologic group:** B

**Erosion factors (upper layer):** K value—0.17; T value—3; wind erodibility group—4
**Hazard of erosion:** By water—slight; by wind—moderate

**Shrink-swell potential:** Low
**Corrosivity:** To steel—high; to concrete—low
**Potential for frost action:** Moderate

**Contrasting Inclusions**

**Inclusion 1**

**Classification:** Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic

**Positions on landscape:** Alluvial flat remnants adjacent to the lower fan skirt margins
Distinctive present vegetation: Black sagebrush, shadscale

Inclusion 2
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: The lower fan skirt margins
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Classification: Xeric Torriorthents, loamy-skeletal, mixed, mesic
Positions on landscape: Fan drainageways, inset fans
Distinctive present vegetation: Indian ricegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Unsel Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Caphor Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Chedehap Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Unsel Soil
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Caphor Soil
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Chedehap Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Unsel and Caphor soils—Ille, irrigated, and VIIc, nonirrigated; Chedehap soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Unsel soil—029X017N; Caphor soil—028B017N; Chedehap soil—028B052N; Inclusion 1—024X003N; Inclusion 2—024X002N; Inclusion 3—028B010N

150—Chedehap-Enko-Ricert association
Positions on landscape: Piedmont slopes

Composition
Major components:
Chedehap coarse sandy loam, 2 to 8 percent slopes—45 percent
Enko gravelly fine sandy loam, 2 to 8 percent slopes—25 percent
Ricert gravelly fine sandy loam, 2 to 4 percent slopes—15 percent
Contrasting inclusions:
Durixerolic Camborthids, coarse-loamy, mixed, mesic, 4 to 8 percent slopes—6 percent
Durixerolic Haplargids, fine-loamy, mixed, mesic, 2 to 4 percent slopes—5 percent
Xeric Torriorthents, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—4 percent

Characteristics of the Chedehap Soil
Classification: Xerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans, fan aprons
Parent material: Moderately coarse textured alluvium
Slope: 2 to 8 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, needleandthread, bluegrass
Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 5 inches
Texture: Coarse sandy loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 5 to 12 inches
Texture: Sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 12 to 37 inches
Texture: Sandy loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 37 to 60 inches
Texture: Loamy coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately rapid over very rapid
Available water capacity: 4.1 to 6.0 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.17; T value—3;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Enko Soil
Classification: Durixerollic Cambhoids, coarse-loamy, mixed, mesic
Positions on landscape: Fan apron remnants
Parent material: Mixed alluvium that includes some loess and volcanic ash
Slope: 2 to 8 percent
Elevation: 5,900 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F

Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush,
Indian ricegrass, bottlebrush squirreltail

Typical Profile
Depth: 0 to 6 inches
Texture: Gravelly fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Depth: 6 to 12 inches
Texture: Loam, sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 12 to 18 inches
Texture: Fine sandy loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 18 to 60 inches
Texture: Sandy loam, fine sandy loam
Structure: Massive
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.1 to 8.2 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—5;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Ricert Soil
Classification: Duric Natragids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Parent material: Thin loess deposits over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,800 to 6,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile
Depth: 0 to 6 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 6 to 18 inches
Texture: Loam, clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 25 to 46

Depth: 18 to 60 inches
Texture: Very gravelly sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 6 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The upper part of fan apron remnants
Distinctive present vegetation: Spiny hopsage, Wyoming big sagebrush, needleandthread

Inclusion 2
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic

Positions on landscape: The upper part of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, Indian ricegrass

Inclusion 3
Classification: Xeric Torriorthents, loamy-skeletal, mixed, mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Black sagebrush, needleandthread

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Chedehap Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Enko Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Ricert Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Chedehap Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, frost action
Pond reservoir areas: Severe—seepage, piping
Embankments, dikes, and levees: Severe—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Enko Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Ricert Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Chedehap and Ricert soils—IVe, irrigated, and VIl, nonirrigated; Enko soil—IVe, irrigated, and Vls, nonirrigated
Range site: Chedehap soil—028B052N; Enko soil—028B010N; Ricert soil—028B017N; Inclusion 1—028B052N; Inclusion 2—028B010N; Inclusion 3—028B016N

160—Batan association
Positions on landscape: Alluvial flat remnants

Composition
Major components:
Batan silt loam, 0 to 2 percent slopes—50 percent
Batan silt loam, slightly saline, 0 to 2 percent slopes—40 percent
Contrasting inclusions:
Wholan silt loam, 0 to 2 percent slopes—8 percent
Rasille silt loam, 0 to 2 percent slopes—2 percent

Characteristics of the Batan Soil
Classification: Durorthid Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Broad, slightly dissected alluvial flat remnants
Parent material: Silty alluvium that is high in content of loess and pyroclastic material
Slope: 0 to 2 percent
Elevation: 5,600 to 6,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Typical Profile
Depth: 0 to 5 inches
Texture: Silt loam
Structure: Platy
Consistence: Hard, very friable
Reaction: Strongly alkaline

Salinity: 20 to 40 millimhos per centimeter
Sodicity (SAR): 46 to 60
Depth: 5 to 68 inches
Texture: Stratified silt loam to silty clay loam
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Batan Soil, Slightly Saline
Classification: Durorthid Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: The upper dissected alluvial flat remnants
Parent material: Silty alluvium that is high in content of loess and pyroclastic material
Slope: 0 to 2 percent
Elevation: 5,600 to 6,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile
Depth: 0 to 5 inches
Texture: Silt loam
Structure: Platy
Consistence: Hard, very friable
Reaction: Strongly alkaline

Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 5 to 68 inches
Texture: Stratified silt loam to silty clay loam
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter

Sodicity (SAR): 25 to 46

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderately slow
*Available water capacity:* 11 to 12 inches
*Water-supplying capacity:* 7 inches
*Runoff:* Slow
*Hydrologic group:* B
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L
*Hazard of erosion:* By water—slight; by wind—severe
*Shrink-swell potential:* Moderate
*Corrosivity:* To steel—high; to concrete—moderate
*Potential for frost action:* Low

**Contrasting Inclusions**

**Inclusion 1**
*Classification:* Typic Camborthids, coarse-silty, mixed, mesic
*Positions on landscape:* Inset fans dissecting alluvial flat remnants
*Distinctive present vegetation:* Winterfat, bud sagebrush, Indian ricegrass

**Inclusion 2**
*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic
*Positions on landscape:* Narrow drainageways
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage, Indian ricegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Batan Soil**
*Wild herbaceous plants (nonirrigated):* Very poor
*Shrubs (nonirrigated):* Very poor

**Batan Soil, Slightly Saline**
*Wild herbaceous plants (nonirrigated):* Very poor
*Shrubs (nonirrigated):* Very poor

**Suitability and Limitations for Selected Uses**

**Batan Soil**
*Range seeding:* Poor—too arid, excess salt, excess sodium
*Roadfill:* Poor—low strength
*Topsoil:* Poor—excess sodium
*Daily cover for landfill:* Good
*Shallow excavations:* Slight
*Local roads and streets:* Severe—low strength
*Pond reservoir areas:* Slight

**Embankments, dikes, and levees:** Severe—excess salt, excess sodium

**Sand:** Improbable source—excess fines

**Gravel:** Improbable source—excess fines

**Batan Soil, Slightly Saline**
*Range seeding:* Poor—too arid, excess salt, excess sodium
*Roadfill:* Poor—low strength
*Topsoil:* Poor—excess salt, excess sodium
*Daily cover for landfill:* Good
*Shallow excavations:* Slight
*Local roads and streets:* Severe—low strength
*Pond reservoir areas:* Slight

**Embankments, dikes, and levees:** Slight—excess sodium

**Sand:** Improbable source—excess fines

**Gravel:** Improbable source—excess fines

**Restrictive Features for Selected Practices**

**Batan Soil**
*Drainage:* Deep to water
*Irrigation:* Excess salt, excess sodium
*Terraces and diversions:* Erodes easily

**Batan Soil, Slightly Saline**
*Drainage:* Deep to water
*Irrigation:* Excess salt, excess sodium
*Terraces and diversions:* Erodes easily

**Interpretive Groups**

*Land capability classification:* Batan soil—VIIa, nonirrigated; Batan soil, slightly saline—VIIa, nonirrigated
*Range site:* Batan soil—024X003N; Batan soil, slightly saline—024X002N; Inclusion 1—024X004N; Inclusion 2—028B010N

161—Batan silt loam

*Positions on landscape:* Alluvial flat remnants

**Composition**

*Major component:* Batan silt loam, 0 to 2 percent slopes—85 percent

**Contrasting inclusions:**

Bubus very fine sandy loam, 0 to 2 percent slopes—5 percent

Typic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

Sonoma silt loam, rarely flooded, strongly saline, 0 to 2 percent slopes—5 percent

**Characteristics of the Batan Soil**

*Classification:* Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants
Parent material: Silty alluvium that is high in content of loess and pyroclastic material
Slope: 0 to 2 percent
Elevation: 5.200 to 6.100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Typical Profile
Depth: 0 to 5 inches
Texture: Silt loam
Structure: Platy
Consistency: Hard, very friable
Reaction: Strongly alkaline
Salinity: 20 to 40 millimhos per centimeter
Sodicity (SAR): 46 to 60
Depth: 5 to 68 inches
Texture: Stratified silt loam to silty clay loam
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—severe
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: The highest part of alluvial flat remnants
Distinctive present vegetation: Black greasewood, shadscale, bud sagebrush

Inclusion 2
Classification: Typic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Recent alluvial flats
Distinctive present vegetation: Black greasewood, shadscale, bud sagebrush

Inclusion 3
Classification: Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Smooth axial-stream flood plains
Distinctive present vegetation: Basin wildrye, black greasewood

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices
Drainage: Deep to water
Irrigation: Excess salt, excess sodium
Terraces and diversions: Erodes easily

Interpretive Groups
Land capability classification: Batan soil—VIIa, nonirrigated
Range site: Batan soil—024X003N; Inclusion 1—024X003N; Inclusion 2—024X012N; Inclusion 3—024X007N

162—Batan-Kelk association
Positions on landscape: Alluvial flats, fan skirts

Composition
Major components:
Batan silt loam, 0 to 2 percent slopes—40 percent
Kelk silt loam, 0 to 2 percent slopes—35 percent
Kelk silt loam, occasionally flooded, 0 to 2 percent slopes—15 percent
Contrasting inclusions:
Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—8 percent
Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 2 percent slopes—2 percent

**Characteristics of the Batan Soil**

**Classification**: Durorthidic Torriorthents, fine-silty, mixed
(calcareous), mesic

**Positions on landscape**: Alluvial flat remnants

**Parent material**: Silty alluvium that is high in content of loess and pyroclastic material

**Slope**: 0 to 2 percent

**Elevation**: 5,600 to 5,800 feet

**Average annual precipitation**: About 7 inches

**Average annual air temperature**: About 49 degrees F

**Frost-free season**: About 120 days

**Dominant present vegetation**: Shadscale, black greasewood, bottlebrush squirreltail

**Typical Profile**

**Depth**: 0 to 5 inches

**Texture**: Silt loam

**Structure**: Platy

**Consistence**: Hard, very friable

**Reaction**: Strongly alkaline

**Salinity**: 20 to 40 millimhos per centimeter

**Sodicity (SAR)**: 46 to 60

**Depth**: 5 to 68 inches

**Texture**: Stratified silt loam to silty clay loam

**Structure**: Massive

**Consistence**: Hard, friable

**Reaction**: Strongly alkaline

**Salinity**: 8 to 16 millimhos per centimeter

**Sodicity (SAR)**: 25 to 50

**Soil and Water Features**

**Depth to a seasonal high water table**: More than 60 inches

**Frequency of flooding**: None

**Permeability**: Moderately slow

**Available water capacity**: 11 to 12 inches

**Water-supplying capacity**: 7 inches

**Runoff**: Slow

**Hydrologic group**: B

**Erosion factors (upper layer)**: K value—0.55; T value—5;
wind erodibility group—4L

**Hazard of erosion**: By water—slight; by wind—severe

**Shrink-swell potential**: Moderate

**Corrosivity**: To steel—high; to concrete—high

**Potential for frost action**: Low

**Characteristics of the Kelk Soil**

**Classification**: Durixerolic Camborthids, fine-silty, mixed, mesic

**Positions on landscape**: Inset fans dissecting alluvial flats

**Parent material**: Loess that includes volcanic ash, mixed alluvium

**Slope**: 0 to 2 percent

**Elevation**: 5,600 to 5,800 feet

**Average annual precipitation**: About 7 inches

**Average annual air temperature**: About 48 degrees F

**Frost-free season**: About 110 days

**Dominant present vegetation**: Black greasewood, basin big sagebrush, basin wildrye

**Typical Profile**

**Depth**: 0 to 3 inches

**Texture**: Silt loam

**Structure**: Subangular blocky

**Consistence**: Slightly hard, very friable

**Reaction**: Moderately alkaline

**Salinity**: 2 to 4 millimhos per centimeter

**Depth**: 3 to 20 inches

**Texture**: Silt loam

**Structure**: Subangular blocky

**Consistence**: Slightly hard, very friable

**Reaction**: Strongly alkaline

**Salinity**: 4 to 16 millimhos per centimeter

**Sodicity (SAR)**: 5 to 13

**Depth**: 20 to 40 inches

**Texture**: Silt loam

**Structure**: Massive

**Consistence**: Hard, firm

**Reaction**: Strongly alkaline

**Salinity**: 4 to 16 millimhos per centimeter

**Sodicity (SAR)**: 13 to 25

**Depth**: 40 to 60 inches

**Texture**: Silt loam

**Structure**: Massive

**Consistence**: Hard, firm

**Reaction**: Strongly alkaline

**Salinity**: 4 to 16 millimhos per centimeter

**Sodicity (SAR)**: 25 to 46

**Soil and Water Features**

**Depth to a seasonal high water table**: More than 60 inches

**Frequency of flooding**: None

**Permeability**: Slow

**Available water capacity**: 10 to 12 inches

**Water-supplying capacity**: 8 inches

**Runoff**: Slow

**Hydrologic group**: C

**Erosion factors (upper layer)**: K value—0.55; T value—5;
wind erodibility group—6

**Hazard of erosion**: By water—slight; by wind—slight

**Shrink-swell potential**: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Moderate

**Characteristics of the Kelk Soil, Occasionally Flooded**

*Classification*: Durixerollic Camborthids, fine-silty, mixed, mesic
*Positions on landscape*: Inset fans
*Parent material*: Loess that includes volcanic ash, mixed alluvium
*Slope*: 0 to 2 percent
*Elevation*: 5,600 to 5,800 feet
*Average annual precipitation*: About 7 inches
*Average annual air temperature*: About 48 degrees F
*Frost-free season*: About 110 days
*Dominant present vegetation*: Basin wildrye, basin big sagebrush, rubber rabbitbrush, black greasewood

**Typical Profile**

*Depth*: 0 to 14 inches
*Texture*: Silt loam
*Structure*: Platy
*Consistency*: Slightly hard, very friable
*Reaction*: Moderately alkaline
*Salinity*: 0 to 2 millimhos per centimeter
*Depth*: 14 to 51 inches
*Texture*: Silt loam
*Structure*: Massive
*Consistency*: Hard, very friable
*Reaction*: Moderately alkaline
*Salinity*: 2 to 4 millimhos per centimeter
*Sodicity (SAR)*: 5 to 13
*Depth*: 51 to 60 inches
*Texture*: Silt loam
*Structure*: Massive
*Consistency*: Slightly hard, very friable
*Reaction*: Strongly alkaline
*Salinity*: 4 to 8 millimhos per centimeter
*Sodicity (SAR)*: 5 to 13

**Soil and Water Features**

*Depth to a seasonal high water table*: More than 60 inches
*Frequency of flooding*: Occasional for brief to long periods in February through June
*Permeability*: Slow
*Available water capacity*: 11 to 12 inches
*Water-supplying capacity*: 8 inches
*Runoff*: Slow
*Hydrologic group*: C
*Erosion factors (upper layer)*: K value—0.55; T value—5; wind erodibility group—6
*Hazard of erosion*: By water—slight; by wind—slight
*Shrink-swell potential*: Moderate

Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Contrasting Inclusions**

*Inclusion 1*
*Classification*: Aeric Halauquepts, fine-silty, mixed (calcareous), mesic
*Positions on landscape*: The lower areas of alluvial flats
*Distinctive present vegetation*: Black greasewood, basin wildrye, inland saltgrass

*Inclusion 2*
*Classification*: Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
*Positions on landscape*: Fan skirts over the higher areas of alluvial flat remnants
*Distinctive present vegetation*: Shadscale, bud sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Batan Soil**

*Wild herbaceous plants (nonirrigated)*: Very poor
*Shrubs (nonirrigated)*: Very poor

**Kelk Soil**

*Wild herbaceous plants (nonirrigated)*: Very poor
*Shrubs (nonirrigated)*: Very poor

**Kelk Soil, Occasionally Flooded**

*Wild herbaceous plants (nonirrigated)*: Poor
*Shrubs (nonirrigated)*: Poor

**Suitability and Limitations for Selected Uses**

**Batan Soil**

*Range seeding*: Poor—too arid, excess salt, excess sodium
*Roadfill*: Poor—low strength
*Topsoil*: Poor—excess salt, excess sodium
*Daily cover for landfill*: Good
*Shallow excavations*: Slight
*Local roads and streets*: Severe—low strength
*Pond reservoir areas*: Slight
*Embankments, dikes, and levees*: Severe—excess salt, excess sodium
*Sand*: Improbable source—excess fines
*Gravel*: Improbable source—excess fines

**Kelk Soil**

*Range seeding*: Poor—excess salt
*Roadfill*: Fair—low strength, shrink-swell
*Topsoil*: Poor—thin layer, excess sodium
*Daily cover for landfill*: Good
*Shallow excavations*: Slight
*Local roads and streets*: Moderate—low strength, frost action, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Kelk Soil, Occasionally Flooded
Range seeding: Fair—too arid
Roadfill: Poor—low strength
Topsoil: Good
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—low strength, flooding
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Batan Soil
Drainage: Deep to water
Irrigation: Excess salt, excess sodium
Terraces and diversions: Erodes easily

Interpretive Groups
Land capability classification: Batan soil—Vlls, nonirrigated; Kelk soil—lls, irrigated, and Vlls, nonirrigated; Kelk soil, occasionally flooded—Ilw, irrigated, and Vlw, nonirrigated
Range site: Batan soil—024X003N; Kelk soil—024X022N; Kelk soil, occasionally flooded—024X006N; Inclusion 1—024X011N; Inclusion 2—028B017N

168—Batan-Babus-Ocala association

Positions on landscape: Alluvial flats, fan skirts

Composition

Major components:
Batan silt loam, 0 to 2 percent slopes—35 percent
Babus very fine sandy loam, 0 to 2 percent slopes—35 percent
Ocala silt loam, occasionally flooded, 0 to 2 percent slopes—20 percent

Contrasting inclusions:
Kelk silt loam, occasionally flooded, 0 to 2 percent slopes—5 percent
Broyles very fine sandy loam, 0 to 2 percent slopes—5 percent

Characteristics of the Batan Soil
Classification: Durorthid Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: The lower alluvial flat remnants

Parent material: Silty alluvium that is high in content of loess and pyroclastic material
Slope: 0 to 2 percent
Elevation: 5,300 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, black sagebrush, bottlebrush squirreltail

Typical Profile
Depth: 0 to 5 inches
Texture: Silt loam
Structure: Platy
Consistency: Hard, very friable
Reaction: Strongly alkaline
Salinity: 20 to 40 millimhos per centimeter
Sodicity (SAR): 46 to 60
Depth: 5 to 68 inches
Texture: Stratified silt loam to silty clay loam
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 50

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Bubus Soil
Classification: Durothid Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: The higher, slightly dissected alluvial flat remnants

Parent material: Mixed alluvium that is high in content of pyroclastic material
Slope: 0 to 2 percent
Elevation: 5,300 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Typical Profile
Depth: 0 to 6 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 13

Depth: 6 to 60 inches
Texture: Stratified sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 20 to 35

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9 to 10 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Ocala Soil
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Low, smooth alluvial flats
Parent material: Mixed silty alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,300 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye, alkali sacaton

Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 30 to 46
Depth: 4 to 36 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistency: Hard, brittle
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 20 to 35
Depth: 36 to 60 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistency: Very hard, very firm
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 20 to 35

Soil and Water Features
Depth to a seasonal high water table: 42 to 60 inches
Frequency of flooding: Occasional for brief to long periods in February through May
Permeability: Slow
Available water capacity: 10 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions
Inclusion 1
Classification: Durixerollic Camborthids, fine-silty, mixed, mesic
Positions on landscape: Fan skirts
Distinctive present vegetation: Basin big sagebrush, black greasewood, basin wildrye

Inclusion 2
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Batan Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Bubus Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Ocala Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Batan Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Bubus Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Ocala Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Batan Soil
Drainage: Deep to water

Irrigation: Excess salt, excess sodium
Terraces and diversions: Erodes easily

Interpretive Groups

Land capability classification: Batan and Bubus soils—VIIa, nonirrigated; Ocala soil—VIIw, nonirrigated
Range site: Batan and Bubus soils—024X003N; Ocala soil—024X007N; Inclusion 1—024X006N; Inclusion 2—024X002N

169—Batan-Ocala association

Positions on landscape: Basin floors
Composition

Major components:
Batan silt loam, 0 to 2 percent slopes—35 percent
Ocala silty clay loam, occasionally flooded, 0 to 2 percent slopes—25 percent
Ocala silty clay loam, rarely flooded, 0 to 2 percent slopes—25 percent
Contrasting inclusions:
Aquic Durorthic Torriorthents, fine-silty, mixed, mesic, 0 to 2 percent slopes—5 percent
Playas—5 percent
Xeric Torriorthents, coarse-loamy, mixed (calcic), mesic, 8 to 15 percent slopes—5 percent

Characteristics of the Batan Soil

Classification: Durothric Torriorthents, fine-silty, mixed (calcic), mesic
Positions on landscape: Alluvial flat remnants
Parent material: Silty alluvium that is high in content of loess and pyroclastic material
Slope: 0 to 2 percent
Elevation: 5,500 to 6,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Typical Profile

Depth: 0 to 5 inches
Texture: Silt loam
Structure: Platy
Consistency: Hard, very friable
Reaction: Strongly alkaline
Salinity: 20 to 40 millimhos per centimeter
Sodicity (SAR): 40 to 50
Depth: 5 to 68 inches
Texture: Stratified silt loam to silty clay loam
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 50

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Ocala Soil, Occasionally Flooded

Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: The higher alluvial flats near shallow channels
Parent material: Mixed silty alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,500 to 6,400 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye, alkali sacaton

Typical Profile
Depth: 0 to 4 inches
Texture: Silty clay loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Very strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 30 to 50

Depth: 4 to 36 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistency: Hard, brittle
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 20 to 35

Depth: 36 to 60 inches
Texture: Silt loam, silty clay loam

Structure: Massive
Consistency: Very hard, very firm
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 20 to 35

Soil and Water Features
Depth to a seasonal high water table: 42 to 60 inches
Frequency of flooding: Occasional for brief to long periods in February through May
Permeability: Slow
Available water capacity: 10 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Ocala Soil, Rarely Flooded

Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: The lower alluvial flats that are subject to ponding
Parent material: Mixed silty alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,500 to 6,400 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye

Typical Profile
Depth: 0 to 6 inches
Texture: Silty clay loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Very strongly alkaline
Salinity: 40 to 50 millimhos per centimeter
Sodicity (SAR): 40 to 60

Depth: 6 to 13 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistency: Hard, brittle
Reaction: Strongly alkaline
Salinity: 25 to 40 millimhos per centimeter
Sodicity (SAR): 25 to 40

Depth: 13 to 60 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistency: Very hard, very firm
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 40

Soil and Water Features
Depth to a seasonal high water table: 42 to 60 inches
Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 10 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions
Inclusion 1
Classification: Aquic Durorthic Torriorthents, fine-silty, mixed, mesic
Positions on landscape: Inset fans within alluvial flats
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 2
Positions on landscape: Irregularly shaped depressions and sink areas
Distinctive present vegetation: None

Inclusion 3
Classification: Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Convex, stabilized sand sheets
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Batan Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Ocala Soil, Occasionally Flooded
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Ocala Soil, Rarely Flooded
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses
Batan Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Ocala Soil, Occasionally Flooded
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Ocala Soil, Rarely Flooded
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices
Batan Soil
Drainage: Deep to water
Irrigation: Excess salt, excess sodium
Terraces and diversions: Erodes easily

Interpretive Groups
Land capability classification: Batan soil—VIIa, nonirrigated; Ocala soils—VIIw, nonirrigated
Range site: Batan soil—024X003N; Ocala soil, occasionally flooded—024X007N; Ocala soil, rarely
flooded—024X011N; Inclusion 1—024X006N; 
Inclusion 2—none; Inclusion 3—024X005N

170—Beoska-Orovada association

*Positions on landscape:* Fan piedmonts

**Composition**

*Major components:*
Beoska gravelly sandy loam, 2 to 4 percent slopes—60 percent
Orovada fine sandy loam, rarely flooded, 2 to 8 percent slopes—25 percent

*Contrasting inclusions:*
Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—7 percent
Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—4 percent
Oxorel very fine sandy loam, 0 to 4 percent slopes—4 percent

**Characteristics of the Beoska Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic
*Positions on landscape:* Summits of fan piedmont remnants
*Parent material:* Loess over loamy and gravelly mixed alluvium
*Slope:* 2 to 4 percent
*Elevation:* 5,800 to 6,000 feet
*Average annual precipitation:* About 7 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

**Typical Profile**

*Depth:* 0 to 13 inches
*Texture:* Gravelly sandy loam
*Structure:* Platy
*Consistence:* Slightly hard, very friable
*Reaction:* Moderately alkaline
*Salinity:* 2 to 4 millimhos per centimeter
*Depth:* 13 to 24 inches
*Texture:* Silty clay loam, silt loam
*Structure:* Prismatic
*Consistence:* Hard, very friable
*Reaction:* Strongly alkaline
*Salinity:* 8 to 16 millimhos per centimeter
*Sodicity (SAR):* 13 to 25
*Depth:* 24 to 55 inches
*Texture:* Gravelly very fine sandy loam
*Structure:* Massive
*Consistence:* Soft, very friable
*Reaction:* Strongly alkaline
*Salinity:* 8 to 16 millimhos per centimeter
*Sodicity (SAR):* 25 to 40

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderately slow
*Available water capacity:* 6.8 to 7.8 inches
*Water-supplying capacity:* 7 inches
*Runoff:* Slow
*Hydrologic group:* B
*Erosion factors (upper layer):* K value—0.20; T value—5; wind erodibility group—4
*Hazard of erosion:* By water—slight; by wind—severe
*Shrink-swell potential:* Moderate
*Corrosivity:* To steel—high; to concrete—high
*Potential for frost action:* Low

**Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic
*Positions on landscape:* Inset fan remnants
*Parent material:* Loess that is high in content of volcanic ash over mixed alluvium
*Slope:* 2 to 8 percent
*Elevation:* 5,800 to 6,000 feet
*Average annual precipitation:* About 8 inches
*Average annual air temperature:* About 48 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

*Depth:* 0 to 8 inches
*Texture:* Fine sandy loam
*Structure:* Subangular blocky
*Consistence:* Slightly hard, very friable
*Reaction:* Neutral
*Salinity:* 0 to 2 millimhos per centimeter
*Depth:* 8 to 20 inches
*Texture:* Fine sandy loam, loam
*Structure:* Subangular blocky
*Consistence:* Slightly hard, very friable
*Reaction:* Mildly alkaline
*Salinity:* 0 to 2 millimhos per centimeter
Depth: 20 to 60 inches  
Texture: Stratified fine sandy loam to silt loam  
Structure: Massive  
Consistence: Slightly hard, friable  
Reaction: Moderately alkaline  
Salinity: 4 to 8 millimhos per centimeter  

**Soil and Water Features**  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: Rare  
Permeability: Moderate  
Available water capacity: 8.4 to 9.6 inches  
Water-supplying capacity: 8 inches  
Runoff: Medium  
Hydrologic group: B  
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3  
Hazard of erosion: By water—slight; by wind—severe  
Shrink-swell potential: Low  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Moderate

**Contrasting Inclusions**  

**Inclusion 1**  
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
Positions on landscape: The lower side slopes of fan piedmont remnants  
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

**Inclusion 2**  
Classification: Xerollic Camborthids, coarse-loamy, mixed, mesic  
Positions on landscape: Broad inset fans  
Distinctive present vegetation: Wyoming big sagebrush, Thber needlegrass

**Inclusion 3**  
Classification: Duric Natragids, fine, montmorillonitic, mesic  
Positions on landscape: The higher summits of fan piedmont remnants  
Distinctive present vegetation: Shadscale, bud sagebrush

**Major Current Uses**  
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**  

**Beoska Soil**  
Wild herbaceous plants (nonirrigated): Very poor  
Shrubs (nonirrigated): Very poor  

**Orovada Soil**  
Wild herbaceous plants (nonirrigated): Fair  
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**  

**Beoska Soil**  
Range seeding: Poor—too arid, excess salt, excess sodium  
Roadfill: Good  
Topsoil: Poor—small stones, excess salt, area reclaim  
Daily cover for landfill: Poor—small stones  
Shallow excavations: Slight  
Local roads and streets: Slight  
Pond reservoir areas: Severe—seepage  
Embankments, dikes, and levees: Severe—excess salt, excess sodium  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines

**Orovada Soil**  
Range seeding: Fair—too arid  
Roadfill: Good  
Topsoil: Fair—small stones, thin layer  
Daily cover for landfill: Good  
Shallow excavations: Slight  
Local roads and streets: Moderate—frost action, flooding  
Pond reservoir areas: Moderate—seepage, slope  
Embankments, dikes, and levees: Severe—piping  
Sand: Improbable—excess fines  
Gravel: Improbable—excess fines

**Interpretive Groups**  
Land capability classification: Beoska soil—Ill, irrigated, and Vlls, nonirrigated; Orovada soil—Ill, irrigated, and Vlc, nonirrigated  
Range site: Beoska soil—024X002N; Orovada soil—028B010N; Inclusion 1—024X020N; Inclusion 2—024X005N; Inclusion 3—024X002N

**171—Beoska silt loam, 2 to 8 percent slopes**  
Positions on landscape: Fan piedmonts

**Composition**  
Major component:  
Beoska silt loam, 2 to 8 percent slopes—85 percent  
Contrasting inclusions:  
Entic Durorthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—5 percent  
Broyles very fine sandy loam, 2 to 8 percent slopes—4 percent  
Tenabo silt loam, 2 to 8 percent slopes—4 percent  
Orovada fine sandy loam, 2 to 8 percent slopes—2 percent

**Characteristics of the Beoska Soil**  
Classification: Duric Natragids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,100 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile
Depth: 0 to 13 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter

Depth: 13 to 24 inches
Texture: Silty clay loam, silt loam
Structure: Prismatic
Consistency: Hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 20 to 40

Depth: 24 to 55 inches
Texture: Gravelly very fine sandy loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 40 to 60

Depth: 55 to 60 inches
Texture: Very gravelly fine sandy loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 40 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 7.8 to 9.7 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Entic Durorthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 2
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The lower inset fans and fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 3
Classification: Typic Nadurargids, loamy, mixed, mesic, shallow
Positions on landscape: The higher summits of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 4
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Drainageways, the higher inset fans
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, Indian ricegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, excess salt, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Interpretive Groups

Land capability classification: Beoska soil—IIIe, irrigated; Vilis, nonirrigated
Range site: Beoska soil—024X002N; Inclusions 1, 2, and 3—024X002N; Inclusion 4—024X020N

172—Beoska-Tenabo complex

Positions on landscape: Fan piedmonts

Composition

Major components:
Beoska silt loam, 0 to 2 percent slopes—60 percent
Tenabo silt loam, 0 to 2 percent slopes—30 percent
Contrasting inclusions:
Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—7 percent
Haplic Nadurargids, clayey, montmorillonitic, mesic, shallow, 0 to 2 percent slopes—3 percent

Characteristics of the Beoska Soil

Classification: Duric Natrarudgs, fine-loamy, mixed, mesic
Positions on landscape: The lower fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,100 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60
Depth: 55 to 60 inches
Texture: Very gravelly fine sandy loam
Structure: Massive

Characteristics of the Tenabo Soil

Classification: Typic Nadurargids, loamy, mixed, mesic, shallow
Positions on landscape: The higher fan piedmont remnants
Parent material: Thin loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,100 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile

Depth: 0 to 13 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 13 to 24 inches
Texture: Silty clay loam, silt loam
Structure: Prismatic
Consistence: Hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Depth: 24 to 55 inches
Texture: Gravelly very fine sandy loam
Structure: Massive

Rock fragments on surface: 30 percent pebbles
Depth: 0 to 13 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 5 to 10
Depth: 13 to 20 inches
Texture: Clay loam, gravelly clay loam, silty clay loam
Structure: Prismatic
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 20 to 39 inches
Material: Indurated hardpan
Structure: Platy
Consistence: Extremely hard, extremely firm
Depth: 39 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 4 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to the hardpan: 9 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.8 to 3.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.55; T value—1;
wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan drainage ways
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Inclusion 2
Classification: Haplic Nadurargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: The intermediate part of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Suitability for Wildlife Habitat Elements
Beoska Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Tenabo Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses
Beoska Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, excess salt, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Tenabo Soil
Range seeding: Poor—too arid, droughty, excess sodium
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones, too sandy
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cove
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess sodium, excess salt
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Beoska soil—IIs, irrigated, and VIIIs, nonirrigated; Tenabo soil—IVs, irrigated, and VIIIs, nonirrigated
Range site: Beoska and Tenabo soils—024X002N; Inclusion 1—024X020N; Inclusion 2—024X002N

173—Beoska-Allor association
Positions on landscape: Fan piedmonts

Composition
Major components:
Beoska very fine sandy loam, 2 to 8 percent slopes—55 percent
Allor gravelly loam, 8 to 15 percent slopes—30 percent
Contrasting inclusions:
Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 2
to 8 percent slopes—9 percent
Durixerollic Haplargids, loamy-skeletal, mixed, mesic,
15 to 30 percent slopes—3 percent
Oxcordel gravelly loam, 2 to 4 percent slopes—3 percent

**Characteristics of the Beoska Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed,
mesic
*Positions on landscape:* Summits of fan piedmont
remnants
*Parent material:* Loess over loamy and gravelly mixed
alluvium
*Slope:* 2 to 8 percent
*Elevation:* 5,100 to 5,900 feet
*Average annual precipitation:* About 7 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Shadscale, bud
sagebrush, Indian ricegrass, bottlebrush squirreltail

**Typical Profile**

*Depth:* 0 to 13 inches
*Texture:* Very fine sandy loam
*Structure:* Platy
*Consistence:* Slightly hard, very friable
*Reaction:* Moderately alkaline
*Salinity:* 2 to 4 millimhos per centimeter
*Sodicity (SAR):* 0 to 5

*Depth:* 13 to 24 inches
*Texture:* Silty clay loam, silt loam
*Structure:* Prismatic
*Consistence:* Hard, very friable
*Reaction:* Strongly alkaline
*Salinity:* 8 to 16 millimhos per centimeter
*Sodicity (SAR):* 25 to 46

*Depth:* 24 to 55 inches
*Texture:* Gravelly very fine sandy loam
*Structure:* Massive
*Consistence:* Soft, very friable
*Reaction:* Strongly alkaline
*Salinity:* 16 to 30 millimhos per centimeter
*Sodicity (SAR):* 46 to 60

*Depth:* 55 to 60 inches
*Texture:* Very gravelly fine sandy loam
*Structure:* Massive
*Consistence:* Soft, very friable
*Reaction:* Strongly alkaline
*Salinity:* 16 to 30 millimhos per centimeter
*Sodicity (SAR):* 46 to 60

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60
inches
*Frequency of flooding:* None
*Permeability:* Moderately slow
*Available water capacity:* 7.8 to 9.7 inches
*Water-supplying capacity:* 7 inches
*Runoff:* Medium
*Hydrologic group:* B
*Erosion factors (upper layer):* K value—0.49; T value—5;
wind erodibility group—3
*Hazard of erosion:* By water—slight; by wind—severe
*Shrink-swell potential:* Moderate
*Corrosivity:* To steel—high; to concrete—high
*Potential for frost action:* Low

**Characteristics of the Allor Soil**

*Classification:* Durixerollic Haplargids, fine-loamy, mixed,
mesic
*Positions on landscape:* Side slopes of fan piedmont
remnants
*Parent material:* Mixed alluvium
*Slope:* 8 to 15 percent
*Elevation:* 5,200 to 5,900 feet
*Average annual precipitation:* About 9 inches
*Average annual air temperature:* About 48 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Wyoming big sagebrush,
bluegrass, Indian ricegrass

**Typical Profile**

*Rock fragments on surface:* 30 percent pebbles
*Depth:* 0 to 12 inches
*Texture:* Gravelly loam
*Structure:* Subangular blocky
*Consistence:* Soft, very friable
*Reaction:* Mildly alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Depth:* 12 to 34 inches
*Texture:* Gravelly clay loam
*Structure:* Subangular blocky
*Consistence:* Slightly hard, friable
*Reaction:* Mildly alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Depth:* 34 to 60 inches
*Texture:* Gravelly loamy sand, very gravelly loamy sand
*Structure:* Massive
*Consistence:* Very hard, firm
*Reaction:* Mildly alkaline
*Salinity:* 0 to 2 millimhos per centimeter

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60
inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.9 to 6.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Contrasting Inclusions**

**Inclusion 1**
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

**Inclusion 2**
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

**Inclusion 3**
Classification: Duric Natrargids, fine, montmorillonitic, mesic
Positions on landscape: The higher summits of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Beoska Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Allor Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Beoska Soil**
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, excess salt, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight

Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Allor Soil**
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, shrink-swell, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**

Land capability classification: Beoska soil—IIIe, irrigated, and VIIa, nonirrigated; Allor soil—IVe, irrigated, and VIIc, nonirrigated
Range site: Beoska soil—024X002N; Allor soil—027X008N; Inclusions 1 and 2—024X020N; Inclusion 3—024X02N

174—Beoska-Chiara association

**Positions on landscape:** Fan piedmonts

**Composition**

Major components:
Beoska silt loam, 2 to 8 percent slopes—55 percent
Chiara fine sandy loam, 2 to 8 percent slopes—30 percent

Contrasting inclusions:
Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow, 2 to 8 percent slopes—7 percent
Durixerollic Camborthids, fine-loamy, mixed, mesic, 0 to 4 percent slopes—4 percent
Tenabo silt loam, 2 to 8 percent slopes—4 percent

**Characteristics of the Beoska Soil**

Classification: Duric Natrargids, fine-loamy, mixed, mesic
Positions on landscape: The lower fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,100 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

**Typical Profile**

**Depth:** 0 to 13 inches  
**Texture:** Silt loam  
**Structure:** Platy  
**Consistency:** Slightly hard, very friable  
**Reaction:** Moderately alkaline  
**Salinity:** 2 to 4 millimhos per centimeter  
**Sodicity (SAR):** 0 to 5

**Depth:** 13 to 24 inches  
**Texture:** Silty clay loam, silt loam  
**Structure:** Prismatic  
**Consistency:** Hard, very friable  
**Reaction:** Strongly alkaline  
**Salinity:** 8 to 16 millimhos per centimeter  
**Sodicity (SAR):** 25 to 46

**Depth:** 24 to 55 inches  
**Texture:** Gravelly very fine sandy loam  
**Structure:** Massive  
**Consistency:** Soft, very friable  
**Reaction:** Strongly alkaline  
**Salinity:** 16 to 30 millimhos per centimeter  
**Sodicity (SAR):** 46 to 60

**Depth:** 55 to 60 inches  
**Texture:** Very gravelly fine sandy loam  
**Structure:** Massive  
**Consistency:** Soft, very friable  
**Reaction:** Strongly alkaline  
**Salinity:** 16 to 30 millimhos per centimeter  
**Sodicity (SAR):** 46 to 60

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Moderately slow  
**Available water capacity:** 7.8 to 9.7 inches  
**Water-supplying capacity:** 7 inches  
**Runoff:** Medium  
**Hydrologic group:** B  
**Erosion factors (upper layer):** K value—0.82; T value—5; wind erodibility group—1  
**Hazard of erosion:** By water—slight; by wind—slight  
**Shrink-swell potential:** None  
**Corrosivity:** To steel—low; to concrete—low  
**Potential for frost action:** Low

**Characteristics of the Chiara Soil**

**Classification:** Xerollic Durorthids, loamy, mixed, mesic, shallow

**Positions on landscape:** The higher fan piedmont remnants

**Parent material:** Loess mantle that is high in content of volcanic ash over alluvium  
**Slope:** 2 to 8 percent  
**Elevation:** 5,100 to 5,500 feet  
**Average annual precipitation:** About 9 inches  
**Average annual air temperature:** About 48 degrees F  
**Frost-free season:** About 110 days  
**Dominant present vegetation:** Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

**Depth:** 0 to 5 inches  
**Texture:** Fine sandy loam  
**Structure:** Platy  
**Consistency:** Soft, very friable  
**Reaction:** Moderately alkaline  
**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 5 to 16 inches  
**Texture:** Silt loam, loam  
**Structure:** Subangular blocky  
**Consistency:** Slightly hard, friable  
**Reaction:** Moderately alkaline  
**Salinity:** 2 to 4 millimhos per centimeter

**Depth:** 16 inches  
**Material:** Indurated hardpan  
**Structure:** Massive  
**Consistency:** Extremely hard, extremely firm

**Soil and Water Features**

**Depth to the hardpan:** 10 to 20 inches  
**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Moderate  
**Available water capacity:** 2.4 to 2.9 inches  
**Water-supplying capacity:** 8 inches  
**Runoff:** Medium  
**Hydrologic group:** D  
**Erosion factors (upper layer):** K value—0.37; T value—1; wind erodibility group—3  
**Hazard of erosion:** By water—slight; by wind—slight  
**Shrink-swell potential:** Low  
**Corrosivity:** To steel—high; to concrete—low  
**Potential for frost action:** Moderate

**Contrasting Inclusions**

**Classification:** Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow

**Positions on landscape:** Fan drainageways

**Distinctive present vegetation:** Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail
Inclusion 2
Classification: Durixerolic Camborthids, fine-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 3
Classification: Typic Nadurargids, loamy, mixed, mesic, shallow
Positions on landscape: Summits of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Beoska Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Chiara Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Beoska Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, excess salt, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embarkments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Chiara Soil
Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan
Embarkments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Beoska soil—IIIe, irrigated, and Vlls, nonirrigated; Chiara soil—IVe, irrigated, and Vlls, nonirrigated

Range site: Beoska soil—024X002N; Chiara soil—024X005N; Inclusion 1—024X020N; Inclusion 2—028B003N; Inclusion 3—024X002N

175—Beoska-Whirlo-Misad association
Positions on landscape: Fan piedmonts

Composition

Major components:
Beoska very fine sandy loam, 0 to 2 percent slopes—30 percent
Whirlo silt loam, 0 to 2 percent slopes—30 percent
Misad gravelly sandy loam, 0 to 2 percent slopes—25 percent

Contrasting inclusions:
Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 2 percent slopes—8 percent
Duric Natargids, fine-loamy, mixed, mesic, 0 to 2 percent slopes—7 percent

Characteristics of the Beoska Soil
Classification: Duric Natargids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,200 to 5,400 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile
Depth: 0 to 13 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 13 to 24 inches
Texture: Silty clay loam, silt loam
Structure: Prismatic
Consistence: Hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 24 to 55 inches
Texture: Gravelly very fine sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60
Depth: 55 to 60 inches
Texture: Very gravelly fine sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 7.8 to 9.7 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Whirlo Soil
Classification: Typic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fan remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,200 to 5,400 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile
Depth: 0 to 12 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 12 to 24 inches
Texture: Very gravelly fine sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 24 to 60 inches
Texture: Very gravelly coarse sandy loam
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 4 to 16 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.9 to 6.1 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Misad Soil
Classification: Durothidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Inset fans
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,200 to 5,400 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile
Depth: 0 to 7 inches
Texture: Gravelly sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 7 to 31 inches
Texture: Stratified fine sandy loam to very gravelly sandy loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 31 to 60 inches
Texture: Stratified very gravelly loamy sand to extremely gravelly coarse sand
Structure: Massive
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 13

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 2.9 to 4.1 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

**Contrasting Inclusions**

Inclusion 1
Classification: Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Channels
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Inclusion 2
Classification: Duric Natragids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Beoska Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Whirlo Soil**
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

**Misad Soil**
Wild herbaceous plants (nonirrigated): Very poor

Shrubs (nonirrigated): Very poor

**Suitability and Limitations for Selected Uses**

**Beoska Soil**
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, excess salt, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Whirlo Soil**
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

**Misad Soil**
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Slight—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

**Interpretive Groups**

Land capability classification: Beoska soil—IIIa, irrigated, and VIl, nonirrigated; Whirlo soil—IIc, irrigated, and VIlc, nonirrigated; Misad soil—IVs, irrigated, and Vlls, nonirrigated

Range site: Beoska, Whirlo, and Misad soils—024X002N; Inclusion 1—024X020N; Inclusion 2—024X002N

177—Beoska-Dewar-Orovada association

Positions on landscape: Fan piedmonts
Composition

Major components:
Beoska very fine sandy loam, 4 to 8 percent slopes—40 percent
Dewar gravelly loam, 2 to 8 percent slopes—25 percent
Orovada gravelly very fine sandy loam, 2 to 8 percent slopes—15 percent

Contrasting inclusions:
Durixerolitic Haplargids, loamy-skeletal, mixed, mesic,
15 to 50 percent slopes—7 percent
Xeric Torriorthents, loamy, mixed (calcareous), mesic,
shallow, 15 to 50 percent slopes—7 percent
Duric Natargids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—6 percent

Characteristics of the Beoska Soil
Classification: Duric Natargids, fine-loamy, mixed, mesic
Positions on landscape: Summits and shoulder slopes of
fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope: 4 to 8 percent
Elevation: 5,400 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

Depth: 55 to 60 inches
Texture: Very gravelly fine sandy loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 7.8 to 9.7 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hyrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight, by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Dewar Soil
Classification: Xerollic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: Concave summits and convex shoulder slopes of fan piedmont remnants
Parent material: Loess and mixed silty alluvium that include volcanic ash
Slope: 2 to 8 percent
Elevation: 5,400 to 5,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass

Typical Profile
Depth: 0 to 13 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 13 to 24 inches
Texture: Silty clay loam, silt loam
Structure: Prismatic
Consistency: Hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 40

Depth: 24 to 55 inches
Texture: Gravelly very fine sandy loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Depth: 4 to 14 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline

Depth: 14 to 50 inches
Material: Indurated hardpan
Structure: Platy
Consistence: Extremely hard, extremely firm

Soil and Water Features

Depth to the hardpan: 13 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.7 to 2.3 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.37; T value—1;
wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Orovada Soil

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,400 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.3 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.37; T value—5;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Hapludands, loamy-skeletal, mixed, mesic
Positions on landscape: North-facing side slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass

Inclusion 2
Classification: Xeric Torrithents, loamy, mixed (calcareous), mesic, shallow
Positions on landscape: Side slopes of rock pediment remnants
Distinctive present vegetation: Shadscale, Wyoming big sagebrush, galleta

Inclusion 3
Classification: Duric Natrargids, loamy-skeletal, mixed, mesic
Positions on landscape: South-facing side slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Beoska Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Dewar Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Suitability and Limitations for Selected Uses

Beoska Soil

Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, excess salt, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Dewar Soil

Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Slight—cemented pan
Local roads and streets: Slight—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Orovada Soil

Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Beoska soil—Ille, irrigated, and Vils, nonirrigated; Dewar soil—Ive, irrigated, and Vils, nonirrigated; Orovada soil—Ille, irrigated, and Vlc. nonirrigated

Range site: Beoska soil—024X002N; Dewar soil—024X005N; Orovada soil—028B010N; Inclusion 1—024X005N; Inclusion 2—024X045N; Inclusion 3—024X002N

Composition

Major components:
Needle Peak silt loam, 0 to 2 percent slopes—40 percent
Batan silt loam, 0 to 2 percent slopes—30 percent
Yobe silt loam, 0 to 2 percent slopes—20 percent
Contrasting inclusions:
Xeric Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—7 percent
Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 2 percent slopes—3 percent

Characteristics of the Needle Peak Soil

Classification: Aquic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Fan skirts and inset fans dissecting alluvial flats and lake plains
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Basin wildrye, rubber rabbitbrush, basin big sagebrush, black greasewood

Typical Profile

Depth: 0 to 8 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Depth: 8 to 60 inches
Texture: Silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter

Soil and Water Features

Depth to a seasonal high water table: 48 to 72 inches
Frequency of flooding: Occasional for brief periods in March through June
Permeability: Moderately slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight

180—Needle Peak-Batan-Yobe association

Positions on landscape: Alluvial flats, fan skirts
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: High

Characteristics of the Batan Soil
Classification: Durorthodic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants
Parent material: Silty alluvium that is high in content of loess and pyroclastic material
Slope: 0 to 2 percent
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Typical Profile
Depth: 0 to 16 inches
Texture: Silt loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 25 to 40 millimhos per centimeter
Sodicity (SAR): 46 to 60

Depth: 16 to 60 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 16 to 25 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: 36 to 60 inches
Frequency of flooding: Frequent for brief to long periods in January through April
Permeability: Moderately slow
Available water capacity: 10 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Yobe Soil
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flats
Parent material: Mixed silty lacustrine sediment
Slope: 0 to 2 percent
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 51 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, basin wildrye, rubber rabbitbrush, alkali sacaton

Typical Profile
Depth: 0 to 5 inches
Texture: Silt loam
Structure: Platy
Consistency: Hard, very friable
Reaction: Strongly alkaline
Salinity: 20 to 40 millimhos per centimeter
Sodicity (SAR): 46 to 60

Depth: 5 to 68 inches
Texture: Stratified silt loam to silty clay loam
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Xeric Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: The lower fan skirt margins intermingled with alluvial flat remnants
Distinctive present vegetation: Black greasewood, basin wildrye, basin big sagebrush

Inclusion 2
Classification: Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: The highest fan skirt margins
Distinctive present vegetation: Shadscale, bud sagebrush, Indian ricegrass
Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Needle Peak Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Wetland plants: Fair
Shallow water areas: Fair

Batan Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Poor
Shallow water areas: Fair

Yobe Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Poor
Shallow water areas: Fair

Suitability and Limitations for Selected Uses

Needle Peak Soil
Range seeding: Fair—to too arid
Roadfill: Poor—low strength
Topsoil: Good
Daily cover for landfill: Fair—to too clayey
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Pond reservoir areas: Slight
Embankments, dikes, and levees: Moderate—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Batan Soil
Range seeding: Poor—to too arid, excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Yobe Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action

Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Batan Soil
Drainage: Deep to water
Irrigation: Excess salt, excess sodium
Terraces and diversions: Erodes easily

Interpretive Groups
Land capability classification: Needle Peak soil—Ilw, irrigated, and Vfw, nonirrigated; Batan soil—VIlw, nonirrigated; Yobe soil—VIlw, nonirrigated
Range site: Needle Peak soil—024X006N; Batan soil—024X003N; Yobe soil—024X007N; Inclusion 1—024X022N; Inclusion 2—028B017N

190—Wardenot-Sundown association

Positions on landscape: Fan skirts, inset fans

Composition

Major components:
Wardenot gravelly fine sandy loam, 2 to 4 percent slopes—70 percent
Sundown fine sand, 2 to 4 percent slopes—20 percent

Contrasting inclusions:
Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—6 percent
Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 4 percent slopes—4 percent

Characteristics of the Wardenot Soil

Classification: Typic Torriorthents
Positions on landscape: Fan skirts
Parent material: Mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 51 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Shadscale, Bailey greasewood, bottlebrush squirreltail, galleta

Typical Profile
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 5 to 60 inches
Texture: Stratified very gravelly fine sandy loam to extremely cobbly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately rapid
Available water capacity: 2.7 to 5.0 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: A
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Sundown Soil
Classification: Typic Torripsamments, mixed, mesic
Positions on landscape: Sand sheets over fan skirts
Parent material: Mixed alluvium, eolian deposits
Slope: 2 to 4 percent
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 53 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Shadscale, Indian ricegrass, fourwing saltbush, sand dropseed

Typical Profile
Depth: 0 to 7 inches
Texture: Fine sand
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Depth: 7 to 60 inches
Texture: Loamy fine sand
Structure: Massive
Consistence: Soft, very friable
Reaction: Strongly alkaline

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Rapid
Available water capacity: 5.1 to 5.8 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: The lower margins of fan skirts
Distinctive present vegetation: Shadscale, Bailey greasewood, galleta

Inclusion 2
Classification: Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Black sagebrush, bottlebrush squirreltail, shadscale

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Wardenot Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Sundown Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Wardenot Soil
Range seeding: Poor—too arid, droughty
Roadfill: Fair—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, large stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Sundown Soil
Range seeding: Poor—too arid, droughty, too sandy
Roadfill: Good
Topsoil: Poor—too sandy
Daily cover for landfill: Fair—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Moderate—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**

Land capability classification: Wardenot soil—IIVc, irrigated, and VIIc, nonirrigated; Sundown soil—IIVs, irrigated, and VIIIs, nonirrigated

Range site: Wardenot soil—029X017N; Sundown soil—029X012N; Inclusion 1—029X017N; Inclusion 2—028B011N

191—Wardenot-Laxal association

**Composition**

Major components:
Wardenot gravelly fine sandy loam, 2 to 4 percent slopes—50 percent
Laxal very gravelly fine sandy loam, occasionally flooded, 2 to 4 percent slopes—25 percent
Wardenot gravelly fine sandy loam, strongly saline, 0 to 2 percent slopes—15 percent

Contrasting inclusions:
Unsel gravelly fine sandy loam, 0 to 2 percent slopes—6 percent
Typic Torriorthents, fine-loamy, mixed (calcaneous), mesic, 0 to 2 percent slopes—4 percent

**Characteristics of the Wardenot Soil**

Classification: Typic Torriorthents, sandy-skeletal, mixed, mesic

Positions on landscape: Broad fan skirts

Parent material: Mixed alluvium

Slope: 2 to 4 percent

Elevation: 5,600 to 5,700 feet

Average annual precipitation: About 7 inches

Average annual air temperature: About 51 degrees F

Frost-free season: About 130 days

Dominant present vegetation: Shadscale, Bailey greasewood, bottlebrush squirreltail, galleta

**Typical Profile**

Depth: 0 to 10 inches
Texture: Very gravelly fine sandy loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter

Sodicity (SAR): 0 to 13

Depth: 5 to 60 inches
Texture: Stratified very gravelly fine sandy loam to extremely cobbly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: Rare
Permeability: Moderately rapid
Available water capacity: 2.7 to 5.0 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: A
Erosion factors (upper layer): K value—0.10; T value—5;
wind erodibility group—4

Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

**Characteristics of the Laxal Soil**

Classification: Durothidic Torriorthents, loamy-skeletal, mixed (calcaneous), mesic

Positions on landscape: Inset fans

Parent material: Alluvium derived from shale and volcanic rock

Slope: 2 to 4 percent

Elevation: 5,600 to 5,700 feet

Average annual precipitation: About 7 inches

Average annual air temperature: About 50 degrees F

Frost-free season: About 130 days

Dominant present vegetation: Shadscale, Bailey greasewood, bottlebrush squirreltail, galleta

**Typical Profile**

Depth: 0 to 10 inches
Texture: Very gravelly fine sandy loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline

Sodicity (SAR): 0 to 5

Depth: 10 to 60 inches
Texture: Stratified very gravelly sandy loam to very gravelly loamy coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

**Soil and Water Features**
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Occasional for very brief periods in July through September
Permeability: Moderately rapid
Available water capacity: 3.9 to 5.3 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B

Erosion factors (upper layer): K value—0.17; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

**Characteristics of the Wardenot Soil, Strongly Saline**

Classification: Typic Torriorthents, sandy-skeletal, mixed, mesic
Positions on landscape: Narrow, lower margins of fan skirts
Parent material: Mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 51 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Shadscale, black greasewood, bottlebrush squirreltail, galleta

**Typical Profile**
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 25 millimhos per centimeter
Sodicity (SAR): 5 to 13

Depth: 5 to 60 inches
Texture: Stratified very gravelly fine sandy loam and extremely cobbly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13

**Soil and Water Features**
Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: Rare
Permeability: Moderately rapid
Available water capacity: 2.9 to 5.2 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: A
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

**Contrasting Inclusions**

Inclusion 1
Classification: Duric Haplargids, fine-loamy, mixed, mesic
Positions on landscape: The lower fan piedmont remnants
Distinctive present vegetation: Shadscale, Bailey greasewood, galleta

Inclusion 2
Classification: Typic Torriorthents, fine-loamy, mixed (calcareous), mesic
Positions on landscape: Adjacent alluvial flats
Distinctive present vegetation: Black greasewood, seepweed, inland saltgrass

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Wardenot Soil**
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

**Laxal Soil**
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

**Wardenot Soil, Strongly Saline**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Suitability and Limitations for Selected Uses**

**Wardenot Soil**
Range seeding: Poor—too arid, droughty
Roadfill: Fair—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, large stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Laxal Soil
- Range seeding: Poor—too arid
- Roadfill: Good
- Topsoil: Poor—small stones, area reclaim
- Daily cover for landfill: Poor—seepage, too sandy, small stones
- Shallow excavations: Severe—cutbanks cave
- Local roads and streets: Severe—flooding
- Pond reservoir areas: Severe—seepage
- Embankments, dikes, and levees: Severe—seepage
- Sand: Probable source
- Gravel: Probable source

Wardenot Soil, Strongly Saline
- Range seeding: Poor—too arid, droughty, excess salt
- Roadfill: Fair—large stones
- Topsoil: Poor—small stones, area reclaim
- Daily cover for landfill: Poor—seepage, small stones
- Shallow excavations: Severe—cutbanks cave
- Local roads and streets: Moderate—flooding, large stones
- Pond reservoir areas: Severe—seepage
- Embankments, dikes, and levees: Severe—seepage, excess salt
- Sand: Probable source
- Gravel: Probable source

Restrictive Features for Selected Practices

Laxal Soil
- Drainage: Deep to water
- Irrigation: Droughty, flooding, slope
- Terraces and diversions: Too sandy

Interpretive Groups
- Land capability classification: Wardenot soil—IVe, irrigated, and VIIc, nonirrigated; Laxal soil—IVw, irrigated, and VIIw, nonirrigated; Wardenot soil, strongly saline—VIIa, nonirrigated
- Range site: Wardenot and Laxal soils—029X017N; Wardenot soil, strongly saline—024X003N; Inclusion 1—029X017N; Inclusion 2—028B020N

200—Izo-Misad association
- Positions on landscape: Fan skirts, the lower fan piedmonts

Composition
- Izo very gravelly loamy sand, 2 to 4 percent slopes—60 percent
- Misad gravelly sandy loam, 2 to 4 percent slopes—30 percent
- Contrasting inclusions:
  - Unsel gravelly fine sandy loam, 0 to 2 percent slopes—6 percent
  - Durorthidic Torriorthents, fine-loamy, mixed (calcareous), mesic—4 percent

Characteristics of the Izo Soil
- Classification: Typic Torriorthents, sandy-skeletal, mixed, mesic
- Positions on landscape: Inset fans, areas adjacent to channels
- Parent material: Mixed alluvium
- Slope: 2 to 4 percent
- Elevation: 5,600 to 5,800 feet
- Average annual precipitation: About 6 inches
- Average annual air temperature: About 51 degrees F
- Frost-free season: About 120 days
- Dominant present vegetation: Galleta, bottlebrush squirreltail, shadscale, Bailey greasewood

Typical Profile
- Depth: 0 to 2 inches
- Texture: Very gravelly loamy sand
- Structure: Massive
- Consistency: Slightly hard, very friable
- Reaction: Strongly alkaline
- Salinity: 0 to 2 millimhos per centimeter
- Sodicity (SAR): 0 to 5

Depth: 2 to 60 inches
- Texture: Very gravelly coarse sand
- Structure: Single grain
- Consistency: Loose
- Reaction: Strongly alkaline
- Salinity: 0 to 4 millimhos per centimeter
- Sodicity (SAR): 0 to 5

Soil and Water Features
- Depth to a seasonal high water table: More than 60 inches
- Frequency of flooding: Rare
- Permeability: Rapid
- Available water capacity: 1.2 to 2.4 inches
- Water-supplying capacity: 5 inches
- Runoff: Slow
- Hydrologic group: A
- Erosion factors (upper layer): K value—0.05; T value—5; wind erodibility group—4
- Hazard of erosion: By water—slight; by wind—severe
- Shrink-swell potential: Low
- Corrosivity: To steel—high; to concrete—low
- Potential for frost action: Low
Characteristics of the Misad Soil

Classification: Durorthic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

Positions on landscape: Fan skirts

Parent material: Mixed alluvium that includes loess and volcanic ash

Slope: 2 to 4 percent

Elevation: 5,600 to 5,800 feet

Average annual precipitation: About 7 inches

Average annual air temperature: About 49 degrees F

Frost-free season: About 120 days

Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

Depth: 0 to 7 inches

Texture: Gravelly sandy loam

Structure: Platy

Consistency: Slightly hard, very friable

Reaction: Strongly alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 5

Depth: 7 to 31 inches

Texture: Stratified fine sandy loam to very gravelly sandy loam

Structure: Massive

Consistency: Slightly hard, very friable

Reaction: Strongly alkaline

Salinity: 8 to 16 millimhos per centimeter

Sodicity (SAR): 5 to 13

Depth: 31 to 60 inches

Texture: Stratified very gravelly loamy sand to extremely gravelly coarse sand

Structure: Massive

Consistency: Soft, very friable

Reaction: Strongly alkaline

Salinity: 8 to 16 millimhos per centimeter

Sodicity (SAR): 5 to 13

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderately rapid

Available water capacity: 2.9 to 4.1 inches

Water-supplying capacity: 7 inches

Runoff: Slow

Hydrologic group: B

Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—4

Hazard of erosion: By water—slight; by wind—severe

Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Low

Contrasting Inclusions

Inclusion 1

Classification: Duric Haplargids, fine-loamy, mixed, mesic

Positions on landscape: The lower fan piedmont remnants

Distinctive present vegetation: Shadscale, Bailey greasewood, galleta

Inclusion 2

Classification: Durorthic Torriorthents, fine-loamy, mixed (calcareous), mesic

Positions on landscape: Adjacent alluvial flat remnants

Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Izo Soil

Wild herbaceous plants (nonirrigated): Poor

Shrubs (nonirrigated): Poor

Misad Soil

Wild herbaceous plants (nonirrigated): Very poor

Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Izo Soil

Range seeding: Poor—too arid, droughty, small stones

Roadfill: Good

Topsoil: Poor—small stones, area reclaim

Daily cover for landfill: Poor—seepage, too sandy, small stones

Shallow excavations: Severe—cutbanks cave

Local roads and streets: Moderate—flooding

Pond reservoir areas: Severe—seepage

Embankments, dikes, and levees: Severe—seepage

Sand: Probable source

Gravel: Probable source

Misad Soil

Range seeding: Poor—too arid, excess salt

Roadfill: Good

Topsoil: Poor—small stones, area reclaim

Daily cover for landfill: Poor—seepage, too sandy, small stones

Shallow excavations: Severe—cutbanks cave

Local roads and streets: Slight

Pond reservoir areas: Severe—seepage

Embankments, dikes, and levees: Severe—seepage

Sand: Probable source

Gravel: Probable source
Interpretive Groups

Land capability classification: Izo soil—VIIa, nonirrigated; Misad soil—Iva, irrigated, and VIIa, nonirrigated
Range site: Izo soil—029X017N; Misad soil—024X002N; Inclusion 1—029X017N; Inclusion 2—024X003N

201—Izo-Babus association

Positions on landscape: Fan skirts, alluvial flats

Composition

Major components:
Izo gravelly loam, 0 to 4 percent slopes—65 percent
Babus very gravelly very fine sandy loam, eroded, 0 to 2 percent slopes—25 percent
Contrasting inclusions:
Batun silt loam, 0 to 2 percent slopes—7 percent
Playas—3 percent

Characteristics of the Izo Soil

Classification: Typic Torriorthents, sandy-skeletal, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Mixed alluvium
Slope: 0 to 4 percent
Elevation: 5,500 to 5,600 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 51 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Galleta, bottlebrush squirreltail

Typical Profile

Depth: 0 to 2 inches
Texture: Gravelly loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 2 to 60 inches
Texture: Stratified gravelly loamy sand to very gravelly coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare

Permeability: Rapid
Available water capacity: 1.4 to 2.6 inches
Water-supplying capacity: 5 inches
Runoff: Slow
Hydrologic group: A
Erosion factors (upper layer): K value—0.37; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Babus Soil

Classification: Durothridic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants
Parent material: Mixed alluvium that is high in content of pyroclastic material
Slope: 0 to 2 percent
Elevation: 5,500 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Typical Profile

Depth: 0 to 4 inches
Texture: Very gravelly very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 46

Depth: 4 to 60 inches
Texture: Stratified sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.6 to 9.9 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

**Contrasting Inclusions**

**Inclusion 1**
Classification: Durorthidic Torriorthents, fine-silty, mixed
(calcareous), mesic
Positions on landscape: Alluvial flat remnants near
areas of Playas
Distinctive present vegetation: Shadscale, seepweed,
black greasewood

**Inclusion 2**
Positions on landscape: Small sink areas
Distinctive present vegetation: None

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Izo Soil**
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

**Bubus Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Suitability and Limitations for Selected Uses**

**Izo Soil**
Range seeding: Poor—too arid, droughty
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small
stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding
Pond reservoir areas: Severe—seepage
Embarkments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

**Bubus Soil**
Range seeding: Poor—too arid, small stones, excess
salt
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Moderate—seepage
Embarkments, dikes, and levees: Severe—piping,
excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**
Land capability classification: Izo and Bubus soils—VIIs,
nonirrigated
Range site: Izo soil—029X017N; Bubus soil—
024X003N; Inclusion 1—024X003N; Inclusion 2—
none

**210—Laxal association**
Positions on landscape: Fan skirts, the lower fan
piedmonts

**Composition**
Major components:
Laxal gravelly fine sandy loam, 2 to 4 percent slopes—
65 percent
Laxal very gravelly fine sandy loam, occasionally
flooded, 2 to 4 percent slopes—20 percent
Contrasting inclusions:
Xeric Torriorthents, loamy-skeletal, mixed (calcareous),
mesic, 2 to 8 percent slopes—7 percent
Xeric Torriorthents, loamy-skeletal, mixed (calcareous),
mesic, 2 to 4 percent slopes—5 percent
Durorthidic Torriorthents, fine-loamy, mixed
(calcareous), mesic, 2 to 4 percent slopes—3
percent

**Characteristics of the Laxal Soil**
Classification: Durorthidic Torriorthents, loamy-skeletal,
mixed (calcareous), mesic
Positions on landscape: Fan skirts
Parent material: Alluvium derived from shale and
volcanic rock
Slope: 2 to 4 percent
Elevation: 5,600 to 5,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Shadscale, Bailey
greasewood, galleta

**Typical Profile**
Depth: 0 to 6 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 6 to 60 inches
Texture: Stratified very gravelly sandy loam to very
gravelly loamy coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 8 to 13

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: Rare
Permeability: Moderately rapid
Available water capacity: 2.7 to 5.0 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

**Characteristics of the Laxal Soil, Occasionally Flooded**

Classification: Durothritic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

Positions on landscape: Inset fans

Parent material: Alluvium derived from shale and volcanic rock

Slope: 2 to 4 percent
Elevation: 5,600 to 5,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 130 days

Dominant present vegetation: Shadscale, Bailey greasewood, galleta

**Typical Profile**

Depth: 0 to 10 inches
Texture: Very gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 10 to 60 inches
Texture: Stratified very gravelly sandy loam to very gravelly loamy coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: Occasional for very brief periods in July through September
Permeability: Moderately rapid
Available water capacity: 3.9 to 5.3 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.17; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

**Contrasting Inclusions**

**Inclusion 1**

Classification: Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

Positions on landscape: The upper margins of fan skirts

Distinctive present vegetation: Black sagebrush, needleandthread, spiny hopsage

**Inclusion 2**

Classification: Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

Positions on landscape: Adjacent to channels

Distinctive present vegetation: Basin big sagebrush, spiny hopsage, needleandthread

**Inclusion 3**

Classification: Durothritic Torriorthents, fine-loamy, mixed (calcareous), mesic

Positions on landscape: The lower margins of fan skirts

Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Laxal Soil**

Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Laxal Soil, Occasionally Flooded**

Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

**Suitability and Limitations for Selected Uses**

**Laxal Soil**

Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Laxal Soil, Occasionally Flooded
Range seeding: Poor—too arid, small stones
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—flooding
Pond reservoir areas: Severe—seepage
Embalkments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Restrictive Features for Selected Practices

Laxal Soil
Drainage: Deep to water
Irrigation: Droughty, slope, excess salt
Terraces and diversions: Too sandy

Laxal Soil, Occasionally Flooded
Drainage: Deep to water
Irrigation: Droughty, flooding
Terraces and diversions: Too sandy

Interpretive Groups

Land capability classification: Laxal soil—IVs, irrigated, and VII, nonirrigated; Laxal soil, occasionally flooded—IVw, irrigated, and VIIw, nonirrigated
Range site: Laxal soils—029X017N; Inclusion 1—029X008N; Inclusion 2—028B009N; Inclusion 3—024X003N

211—Laxal gravelly fine sandy loam, occasionally flooded, 0 to 2 percent slopes
Positions on landscape: Fan skirts

Composition

Major component:
Laxal gravelly fine sandy loam, occasionally flooded, 0 to 2 percent slopes—90 percent
Contrasting inclusions:
Typic Torriorthents, sandy-skeletal, mixed (calcareous), mesic, frequently flooded, 0 to 2 percent slopes—7 percent
Xeric Torriorthents, sandy-skeletal, mixed (calcareous), mesic, frequently flooded, 0 to 2 percent slopes—3 percent

Characteristics of the Laxal Soil

Classification: Durorthid Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Fan skirts
Parent material: Alluvium derived from shale and volcanic rock
Slope: 0 to 2 percent
Elevation: 5,600 to 5,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Shadscale, Bailey greasewood, galleta

Typical Profile

Depth: 0 to 10 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 10 to 60 inches
Texture: Stratified very gravelly sandy loam to very gravelly loamy coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Occasional for very brief periods in July through September
Permeability: Moderately rapid
Available water capacity: 3.9 to 5.3 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Typic Torriorthents, sandy-skeletal, mixed (calcareous), mesic
Positions on landscape: Areas adjacent to channels
Distinctive present vegetation: Basin big sagebrush, rubber rabbitbrush, spiny hopsage

Inclusion 2
Classification: Xeric Torriorthents, sandy-skeletal, mixed (calcareous), mesic
Positions on landscape: Stable areas adjacent to channels
Distinctive present vegetation: Basin big sagebrush, spiny hopsage, needleandthread

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—floodling
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Restrictive Features for Selected Practices
Drainage: Deep to water
Irrigation: Droughty, flooding
Terraces and diversions: Too sandy

Interpretive Groups
Land capability classification: Laxal soil—Illw, irrigated, and Illw, nonirrigated
Range site: Laxal soil—029X017N; Inclusion 1—028B009N; Inclusion 2—029X008N

212—Laxal-Tomel association
Positions on landscape: Fan piedmonts

Composition
Major components:
Laxal gravelly fine sandy loam, 2 to 4 percent slopes—40 percent
Tomel gravelly fine sandy loam, 2 to 4 percent slopes—25 percent
Laxal gravelly fine sandy loam, occasionally flooded, 2 to 4 percent slopes—20 percent

Contrasting inclusions:
Entic Durorthids, loamy-skeletal, mixed, mesic 2 to 4 percent slopes—6 percent
Xeric Torriorthents, sandy-skeletal, mixed (calcareous), mesic, 2 to 4 percent slopes—5 percent
Durorthidic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 4 percent slopes—4 percent

Characteristics of the Laxal Soil
Classification: Durorthid Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Inset fan remnants
Parent material: Alluvium derived from shale and volcanic rock
Slope: 2 to 4 percent
Elevation: 5,600 to 5,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Shadscale, Bailey greasewood, galieta

Typical Profile
Depth: 0 to 10 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 10 to 60 inches
Texture: Stratified very gravelly sandy loam to very gravelly loamy coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 8 to 13

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately rapid
Available water capacity: 2.7 to 5.0 inches
Water-supplying capacity: 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

**Characteristics of the Tomel Soil**

*Classification:* Typic Durargids, loamy-skeletal, mixed, mesic, shallow
*Positions on landscape:* Fan piedmont remnants
*Parent material:* Alluvium derived from limestone, shale, and chert
*Slope:* 2 to 4 percent
*Elevation:* 5,600 to 5,900 feet
*Average annual precipitation:* About 6 inches
*Average annual air temperature:* About 51 degrees F
*Frost-free season:* About 120 days
*Dominant present vegetation:* Galleta, bottlebrush, squirreltail, shadscale, Bailey greasewood

**Typical Profile**

*Rock fragments on surface:* 55 percent pebbles
*Depth:* 0 to 4 inches
*Texture:* Gravelly fine sandy loam
*Structure:* Platy
*Consistency:* Slightly hard, very friable
*Reaction:* Strongly alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Sodicity (SAR):* 0 to 5
*Depth:* 4 to 18 inches
*Texture:* Very gravelly clay loam, very gravelly sandy clay loam
*Structure:* Subangular blocky
*Consistency:* Slightly hard, very friable
*Reaction:* Very strongly alkaline
*Salinity:* 0 to 4 millimhos per centimeter
*Sodicity (SAR):* 5 to 13
*Depth:* 18 to 33 inches
*Material:* Indurated hardpan
*Structure:* Massive
*Consistency:* Extremely hard, extremely firm
*Depth:* 33 to 60 inches
*Texture:* Extremely gravelly sand
*Structure:* Massive
*Consistency:* Extremely hard, extremely firm
*Reaction:* Strongly alkaline
*Salinity:* 4 to 16 millimhos per centimeter
*Sodicity (SAR):* 5 to 13

**Soil and Water Features**

*Depth to the hardpan:* 10 to 20 inches
*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderately slow
*Available water capacity:* 1.2 to 2.3 inches
*Water-supplying capacity:* 5 inches
*Runoff:* Medium
*Hydrologic group:* D
*Erosion factors (upper layer):* K value—0.20; T value—1; wind erodibility group—4
*Hazard of erosion:* By water—slight; by wind—slight
*Shrink-swell potential:* Low
*Corrosivity:* To steel—high; to concrete—low
*Potential for frost action:* Low

**Characteristics of the Laxal Soil, Occasionally Flooded**

*Classification:* Durorthid Torriorthents, loamy-skeletal, mixed (calcareous), mesic
*Positions on landscape:* Inset fans
*Parent material:* Alluvium derived from shale and volcanic rock
*Slope:* 2 to 4 percent
*Elevation:* 5,600 to 5,900 feet
*Average annual precipitation:* About 7 inches
*Average annual air temperature:* About 50 degrees F
*Frost-free season:* About 130 days
*Dominant present vegetation:* Shadscale, Bailey greasewood, galleta

**Typical Profile**

*Depth:* 0 to 10 inches
*Texture:* Gravelly fine sandy loam
*Structure:* Platy
*Consistency:* Slightly hard, very friable
*Reaction:* Strongly alkaline
*Salinity:* 0 to 4 millimhos per centimeter
*Sodicity (SAR):* 0 to 5
*Depth:* 10 to 60 inches
*Texture:* Stratified very gravelly sandy loam to very gravelly loamy coarse sand
*Structure:* Single grain
*Consistency:* Loose
*Reaction:* Strongly alkaline
*Salinity:* 0 to 4 millimhos per centimeter
*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* Occasional for very brief periods in July through September
*Permeability:* Moderately rapid
*Available water capacity:* 3.9 to 5.3 inches
*Water-supplying capacity:* 7 inches
*Runoff:* Medium
*Hydrologic group:* B
*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—5
*Hazard of erosion:* By water—slight; by wind—severe
*Shrink-swell potential:* Low
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Low

**Contrasting Inclusions**

**Inclusion 1**  
Classification: Entic Durothids, loamy-skeletal, mixed, mesic  
Positions on landscape: Fan piedmont remnants  
Distinctive present vegetation: Black sagebrush, shadscale, bottlebrush squirreltail

**Inclusion 2**  
Classification: Xeric Torriorthents, sandy-skeletal, mixed (calcareous), mesic  
Positions on landscape: Adjacent to channels in the higher areas of the unit  
Distinctive present vegetation: Black sagebrush, spiny hop sage, bottlebrush squirreltail

**Inclusion 3**  
Classification: Durorthid Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic  
Positions on landscape: Adjacent to channels in the lower areas of the unit  
Distinctive present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Laxal Soil**  
Wild herbaceous plants (nonirrigated): Very poor  
Shrubs (nonirrigated): Very poor

**Tomel Soil**  
Wild herbaceous plants (nonirrigated): Poor  
Shrubs (nonirrigated): Poor

**Laxal Soil, Occasionally Flooded**  
Wild herbaceous plants (nonirrigated): Poor  
Shrubs (nonirrigated): Poor

**Suitability and Limitations for Selected Uses**

**Laxal Soil**  
Range seeding: Poor—too arid, excess salt  
Roadfill: Good  
Topsoil: Poor—small stones, area reclaim  
Daily cover for landfill: Poor—small stones  
Shallow excavations: Severe—cutbanks cave  
Local roads and streets: Moderate—flooding  
Pond reservoir areas: Severe—seepage  
Embankments, dikes, and levees: Severe—seepage, excess salt  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines

**Tomel Soil**  
Range seeding: Poor—too arid, droughty

**Roadfill:** Poor—cemented pan  
**Topsoil:** Poor—cemented pan, too sandy, small stones  
**Daily cover for landfill:** Poor—cemented pan, seepage, too sandy  
**Shallow excavations:** Severe—cemented pan, cutbanks cave  
**Local roads and streets:** Severe—cemented pan  
**Pond reservoir areas:** Severe—seepage, cemented pan  
**Embankments, dikes, and levees:** Severe—seepage, excess salt  
**Sand:** Probable source  
**Gravel:** Probable source

**Laxal Soil, Occasionally Flooded**  
Range seeding: Poor—too arid  
Roadfill: Good  
Topsoil: Poor—small stones, area reclaim  
Daily cover for landfill: Poor—seepage, too sandy, small stones  
Shallow excavations: Severe—cutbanks cave  
Local roads and streets: Severe—flooding  
Pond reservoir areas: Severe—seepage  
Embankments, dikes, and levees: Severe—seepage  
Sand: Probable source  
Gravel: Probable source

**Restrictive Features for Selected Practices**

**Laxal Soil**  
Drainage: Deep to water  
Irrigation: Droughty, slope, excess salt  
Terraces and diversions: Too sandy

**Laxal Soil, Occasionally Flooded**  
Drainage: Deep to water  
Irrigation: Droughty, flooding, slope  
Terraces and diversions: Too sandy

**Interpretive Groups**  
Land capability classification: Laxal soil—IVs, irrigated, and VIIIs, nonirrigated; Tomel soil—VIIIs, nonirrigated; Laxal soil, occasionally flooded—IIIb, irrigated, and VIIb, nonirrigated

**Range site:** Laxal and Tomel soils—029X017N;  
Inclusion 1—024X003N; Inclusion 2—029X008N;  
Inclusion 3—029X009N

**220—Blackhawk very fine sandy loam, 2 to 8 percent slopes**

Positions on landscape: Fan piedmonts, fan skirts

**Composition**

Major component:  
Blackhawk very fine sandy loam, 2 to 8 percent slopes—85 percent
Contrasting inclusions:
Durothidic Xeric Torrifluvents, sandy-skeletal, mixed (calcareous), mesic, 2 to 8 percent slopes—10 percent
Broyes very fine sandy loam, moderately saline, 2 to 8 percent slopes—3 percent
Orovada fine sandy loam, 2 to 8 percent slopes—2 percent

Characteristics of the Blackhawk Soil
Classification: Entic Durothids, loamy, mixed, mesic, shallow
Positions on landscape: Fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope: 2 to 8 percent
Elevation: 4,800 to 5,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile
Depth: 0 to 8 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 14 inches
Texture: Loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 14 to 17 inches
Material: Cemented hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm

Depth: 17 to 38 inches
Texture: Loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Very strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 5 to 13

Depth: 38 to 60
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Massive
Consistency: Slightly hard, very friable

Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.2 to 2.7 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.43; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Durothidic Xeric Torrifluvents, sandy-skeletal, mixed (calcareous), mesic
Positions on landscape: Narrow inset fans, areas adjacent to channels
Distinctive present vegetation: Basin big sagebrush, basin wildrye, rubber rabbitbrush

Inclusion 2
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Dissected fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Classification: Durixeric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Broad inset fans
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses
Range seeding: Poor—too arid, droughty
Roadfill: Good
Topsoil: Poor—cemented pan, area reclaim
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Moderate—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Blackhawk soil—IVe, irrigated, and Vlls, nonirrigated
Range site: Blackhawk soil—024X002N; Inclusion 1—028B009N; Inclusion 2—024X020N; Inclusion 3—024X003N

221—Blackhawk-Tenabo-Desatoya Variant association

Positions on landscape: Fan piedmonts

Composition

Major components:
Blackhawk very fine sandy loam, 8 to 15 percent slopes—40 percent
Tenabo very fine sandy loam, 2 to 4 percent slopes—25 percent
Desatoya Variant very gravelly sandy loam, 15 to 30 percent slopes—20 percent

Contrasting inclusions:
Grassval gravelly loam, 2 to 4 percent slopes—6 percent
Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—5 percent
Durixerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—4 percent

Characteristics of the Blackhawk Soil

Classification: Entic Duroorthids, loamy, mixed, mesic, shallow
Positions on landscape: Shoulder slopes of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope: 8 to 15 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Depth: 0 to 8 inches
Texture: Very fine sandy loam
Structure: Platy

Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 8 to 14 inches
Texture: Loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 14 to 17 inches
Material: Cemented hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 17 to 38 inches
Texture: Loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Very strongly alkaline
Salinity: 16 to 25 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 38 to 60
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features

Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.2 to 2.7 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.43; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Tenabo Soil

Classification: Typic Nadurargids, loamy, mixed, mesic, shallow
Positions on landscape: Summits of fan piedmont remnants
Parent material: Thin loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,500 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 4 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 5 to 10
Depth: 4 to 15 inches
Texture: Clay loam, gravelly clay loam, silty clay loam
Structure: Prismatic
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 15 to 28 inches
Material: Indurated hardpan
Structure: Platy
Consistency: Extremely hard, extremely firm
Depth: 28 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline
Salinity: 4 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 40

Soil and Water Features
Depth to the hardpan: 9 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.8 to 3.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.55; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Desatoya Variant Soil
Classification: Xerolic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: South-facing side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 15 to 30 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Indian ricegrass, black sagebrush

Typical Profile
Rock fragments on surface: 45 percent pebbles, 5 percent cobbles
Depth: 0 to 3 inches
Texture: Very gravelly sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 3 to 13 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 13 to 26 inches
Texture: Very gravelly sandy loam
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 26 to 60 inches
Texture: Very gravelly sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate over rapid
Available water capacity: 2.8 to 4.4 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Xerollic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: The higher summits of fan piedmont remnants
Distinctive present vegetation: Black sagebrush, bottlebrush squirreltail

Inclusion 2
Classification: Durixerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: East-, west-, and north-facing side slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, Wyoming big sagebrush, bottlebrush squirreltail

Inclusion 3
Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush, pine bluegrass, needleandthread

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Blackhawk Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Tenabo Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Desatoya Variant Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Blackhawk Soil
Range seeding: Poor—too arid, droughty
Roadfill: Good
Topsoil: Poor—cemented pan, area reclaim

Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Moderate—cemented pan, slope
Pond reservoir areas: Severe—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

Tenabo Soil
Range seeding: Poor—too arid, droughty, excess sodium
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones, too sandy
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess sodium, excess salt
Sand: Probable source
Gravel: Probable source

Desatoya Variant Soil
Range seeding: Poor—small stones
Roadfill: Fair—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Blackhawk and Tenabo soils—IVe, irrigated, and VIIa, nonirrigated; Desatoya Variant soil—VIIa, nonirrigated
Range site: Blackhawk and Tenabo soils—024X002N; Desatoya Variant soil—024X030N; Inclusion 1—024X030N; Inclusion 2—024X045N; Inclusion 3—027X008N

231—Broyles very fine sandy loam, 2 to 4 percent slopes
Positions on landscape: Fan skirts
Composition

Major component:
Broyles very fine sandy loam, 2 to 4 percent slopes—85 percent
Contrasting inclusions:
Entic Durothids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—5 percent
Creemon silt loam, 2 to 4 percent slopes—5 percent
Orovada fine sandy loam, 2 to 4 percent slopes—5 percent

Characteristics of the Broyles Soil

Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Thin loess mantle over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,100 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile

Depth: 0 to 11 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 11 to 60 inches
Texture: Stratified loam to gravelly loamy sand
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.2 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Entic Durothids, coarse-loamy, mixed, mesic
Positions on landscape: Adjoining fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 2
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: The lower fan skirt margins near old channels
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 3
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush, spiny hopage, bottlebrush squirreltail

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Broyles soil—Ile, irrigated, and Vilc, nonirrigated
Range site: Broyles soil—024X002N; Inclusions 1 and 2—024X002N; Inclusion 3—024X020N

235—Broyles-Creemon association

Positions on landscape: Fan skirts
Composition

Major components:
Broyles silt loam, 0 to 2 percent slopes—45 percent
Cremon silt loam, 0 to 2 percent slopes—40 percent
Contrasting inclusions:
Bubus very fine sandy loam, 0 to 2 percent slopes—7 percent
Beoska silt loam, 0 to 2 percent slopes—6 percent
Xerolic Cambords, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—2 percent

Characteristics of the Broyles Soil

Classification: Duric Cambords, coarse-loamy, mixed, mesic
Positions on landscape: The higher fan skirts
Parent material: Thin loess mantle over mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,100 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile

Depth: 0 to 11 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 11 to 60 inches
Texture: Stratified loam to gravelly loamy sand
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.2 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate

Potential for frost action: Low

Characteristics of the Cremon Soil

Classification: Duric Cambshords, coarse-silty, mixed, mesic
Positions on landscape: The lower fan skirts
Parent material: Mixed silty alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,100 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile

Depth: 0 to 7 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 7 to 18 inches
Texture: Silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Depth: 18 to 60 inches
Texture: Stratified very fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low
Contrasting Inclusions

Inclusion 1
Classification: Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: The lower channeled margins of adjacent alluvial flats
Distinctive present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Inclusion 2
Classification: Duric Natrargids, fine-loamy, mixed, mesic
Positions on landscape: Adjacent to the lower fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 3
Classification: Xerolic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush, spiny hobsage, Indian ricegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Broyles Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Creemon Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Broyles Soil
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave

Creemon Soil
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—thin layer
Daily cover for landfill: Good
Shallow excavations: Slight

Restrictive Features for Selected Practices

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Broyles soil—IIs, irrigated, and VIIc, nonirrigated; Creemon soil—Ilc, irrigated, and VIIc, nonirrigated
Range site: Broyles and Creemon soils—024X002N; Inclusion 1—024X003N; Inclusion 2—024X002N; Inclusion 3—024X020N

236—Broyles association
Positions on landscape: Fan skirts

Composition
Major components:
Broyles very fine sandy loam, 2 to 8 percent slopes—45 percent
Broyles very fine sandy loam, moderately saline, 2 to 4 percent slopes—40 percent

Contrasting inclusions:
Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic, 2 to 8 percent slopes—5 percent
Creemon very fine sandy loam, 2 to 8 percent slopes—5 percent
Orovada fine sandy loam, 2 to 8 percent slopes—5 percent

Characteristics of the Broyles Soil

Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Thin loess mantle over mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,100 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile
Depth: 0 to 13 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 13 to 60 inches
Texture: Stratified loam to gravelly loamy sand
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.2 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Broyles Soil, Moderately Saline

Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The lower fan skirt margins near alluvial flats
Parent material: Thin loess mantle over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,100 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, black greasewood, Indian ricegrass, bluegrass

Typical Profile

Depth: 0 to 5 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 10 to 20
Depth: 5 to 11 inches
Texture: Silt loam, very fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 10 to 20
Depth: 11 to 60 inches
Texture: Stratified loam to gravelly loamy sand
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 4 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.1 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Duorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Inset fans on the lower part of fan skirts
Distinctive present vegetation: Wyoming big sagebrush, black greasewood, basin wildrye

Inclusion 2
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Convex, lower fan skirt margins
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 3
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans on the upper part of fan skirts
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, Indian ricegrass

Major Current Uses

Livestock grazing, wildlife habitat
Suitability for Wildlife Habitat Elements

Broyles Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Broyles Soil, Moderately Saline
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Broyles Soil
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Broyles Soil, Moderately Saline
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—small stones, excess salt
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Broyles soil—Ile, irrigated, and Vilc, nonirrigated; Broyles soil, moderately saline—Ills, irrigated, and Vils, nonirrigated
Range site: Broyles soil—024X002N; Broyles soil, moderately saline—024X003N; Inclusion 1—024X002N; Inclusion 2—024X002N; Inclusion 3—024X002N

237—Broyles-Beoska-Orovada association

Positions on landscape: Fan piedmonts, fan skirts

Composition

Major components:
Broyles very fine sandy loam, 2 to 4 percent slopes—40 percent
Beoska very fine sandy loam, 2 to 8 percent slopes—30 percent
Orovada fine sandy loam, 2 to 8 percent slopes—20 percent

Contrasting inclusions:
Durixerolic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent
Tenabo very fine sandy loam, 2 to 8 percent slopes—5 percent

Characteristics of the Broyles Soil

Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Thin loess mantle over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,100 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile

Depth: 0 to 11 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millihms per centimeter
Sodicity (SAR): 2 to 10

Depth: 11 to 60 inches
Texture: Stratified loam to gravelly loamy sand
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millihms per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.2 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Beoska Soil

Classification: Duric Natragids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,100 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

**Typical Profile**

**Depth:** 0 to 13 inches  
**Texture:** Very fine sandy loam  
**Structure:** Platy  
**Consistency:** Slightly hard, very friable  
**Reaction:** Moderately alkaline  
**Salinity:** 2 to 4 millimhos per centimeter  
**Sodicity (SAR):** 0 to 5

**Depth:** 13 to 24 inches  
**Texture:** Silty clay loam, silt loam  
**Structure:** Prismatic  
**Consistency:** Hard, very friable  
**Reaction:** Strongly alkaline  
**Salinity:** 8 to 16 millimhos per centimeter  
**Sodicity (SAR):** 25 to 46

**Depth:** 24 to 55 inches  
**Texture:** Gravelly very fine sandy loam  
**Structure:** Massive  
**Consistency:** Soft, very friable  
**Reaction:** Strongly alkaline  
**Salinity:** 16 to 30 millimhos per centimeter  
**Sodicity (SAR):** 46 to 60

**Depth:** 55 to 60 inches  
**Texture:** Very gravelly fine sandy loam  
**Structure:** Massive  
**Consistency:** Soft, very friable  
**Reaction:** Strongly alkaline  
**Salinity:** 16 to 30 millimhos per centimeter  
**Sodicity (SAR):** 46 to 60

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Moderate  
**Available water capacity:** 8.4 to 9.6 inches  
**Water-supplying capacity:** 7 inches  
**Runoff:** Medium  
**Hydrologic group:** B  
**Erosion factors (upper layer):** K value—0.49; T value—5; wind erodibility group—3  
**Hazard of erosion:** By water—slight; by wind—severe  
**Shrink-swell potential:** Moderate  

**Corrosivity:** To steel—high; to concrete—high  
**Potential for frost action:** Low

**Characteristics of the Orovida Soil**

**Classification:** Durixerollic Camborthids, coarse-loamy, mixed, mesic  
**Position on landscape:** Inset fans  
**Parent material:** Loess mantle that is high in content of volcanic ash over mixed alluvium  
**Slope:** 2 to 8 percent  
**Elevation:** 5,100 to 6,000 feet  
**Average annual precipitation:** About 8 inches  
**Average annual air temperature:** About 48 degrees F  
**Frost-free season:** About 110 days  
**Dominant present vegetation:** Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

**Depth:** 0 to 8 inches  
**Texture:** Fine sandy loam  
**Structure:** Subangular blocky  
**Consistency:** Slightly hard, very friable  
**Reaction:** Neutral  
**Salinity:** 0 to 2 millimhos per centimeter  
**Depth:** 8 to 20 inches  
**Texture:** Fine sandy loam, loam  
**Structure:** Subangular blocky  
**Consistency:** Slightly hard, very friable  
**Reaction:** Mildly alkaline  
**Salinity:** 0 to 2 millimhos per centimeter  
**Depth:** 20 to 60 inches  
**Texture:** Stratified fine sandy loam to silt loam  
**Structure:** Massive  
**Consistency:** Slightly hard, friable  
**Reaction:** Moderately alkaline  
**Salinity:** 4 to 8 millimhos per centimeter  
**Sodicity (SAR):** 0 to 5

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Moderate  
**Available water capacity:** 8.4 to 9.6 inches  
**Water-supplying capacity:** 8 inches  
**Runoff:** Medium  
**Hydrologic group:** B  
**Erosion factors (upper layer):** K value—0.43; T value—5; wind erodibility group—3  
**Hazard of erosion:** By water—slight; by wind—severe  
**Shrink-swell potential:** Low  
**Corrosivity:** To steel—high; to concrete—low  
**Potential for frost action:** Moderate
Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Adjacent to channels
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Inclusion 2
Classification: Typic Nadurargids, loamy, mixed, mesic, shallow
Positions on landscape: The higher fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Broyles Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Beoska Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Broyles Soil
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Beoska Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess salt
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Broyles soil—Illc, irrigated, and VIl, nonirrigated; Beoska soil—Illc, irrigated, and VIl, nonirrigated; Orovada soil—Illc, irrigated, and Vlc, nonirrigated

Range site: Broyles and Beoska soils—024X002N; Orovada soil—028B010N; Inclusion 1—024X020N; Inclusion 2—024X002N

239—Broyles-Tessfive-Perlor association

Positions on landscape: Low, rolling hills

Composition

Major components:
Broyles very fine sandy loam, 4 to 8 percent slopes—40 percent
Tessfive gravelly loam, 2 to 8 percent slopes—25 percent
Perlor fine sandy loam, 8 to 15 percent slopes—20 percent

Contrasting Inclusions:
Duric Camborthids, coarse-loamy, mixed, mesic, 4 to 8 percent slopes—7 percent
Puett fine sandy loam, 15 to 30 percent slopes—6 percent
Orovada fine sandy loam, 0 to 2 percent slopes—2 percent

Characteristics of the Broyles Soil

Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans between hills
Parent material: Thin loess mantle over mixed alluvium
Slope: 4 to 8 percent
Elevation: 5,700 to 5,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass
Typical Profile

Depth: 0 to 13 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 13 to 60 inches
Texture: Stratified loam to gravelly loamy sand
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.2 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Tessfve Soil

Classification: Lithic Xeric Torriorthents, loamy, mixed (calcareous), mesic
Positions on landscape: Crests and shoulder slopes of rolling hills
Parent material: Residuum that is derived from tuffaceous sediment and includes loess
Slope: 2 to 8 percent
Elevation: 5,700 to 5,900 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, shadscale, bud sagebrush

Typical Profile

Rock fragments on surface: 35 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 6 to 16 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 16 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of(void)
Permeability: Moderate
Available water capacity: 1.8 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Perlor Soil

Classification: Typic Torriorthents, loamy, mixed (calcareous), mesic
Positions on landscape: Side slopes of rolling hills
Parent material: Loess-capped residuum derived from tuffaceous sediment
Slope: 8 to 15 percent
Elevation: 5,700 to 5,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, shadscale, bud sagebrush

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 7 inches
Texture: Fine sandy loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 7 to 14 inches
Texture: Loam, sandy loam, gravelly sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 14 inches
Material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.6 to 2.2 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans dissecting low hills
Distinctive present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Inclusion 2
Classification: Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow
Positions on landscape: Eroded escarpments of hills
Distinctive present vegetation: Black sagebrush, bluegrass, small rabbitbrush, Wyoming big sagebrush

Inclusion 3
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Adjacent to channels
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, Indian ricegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Bayles Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Tessfive Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Perior Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Bayles Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Tessfive Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Moderate—depth to rock, frost action
Pond reservoir areas: Severe—depth to rock
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Perior Soil
Range seeding: Poor—too arid, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock
Shallow excavations: Severe—depth to rock
Local roads and streets: Moderate—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Bayles soil—llle, irrigated, and Vllc, nonirrigated; Tessfive and Perior soils—Vlls, nonirrigated
Range site: Bayles soil—024X002N; Tessfive soil—024X030N; Perior soil—024X002N; Inclusion 1—024X003N; Inclusion 2—025X025N; Inclusion 3—024X020N
249—Bubus association

Positions on landscape: Basin floors

Composition

Major components:
Bubus very fine sandy loam, slightly saline, 2 to 4 percent slopes—65 percent
Bubus very fine sandy loam, 0 to 2 percent slopes—20 percent

Contrasting inclusions:
Typic Torriorthents, sandy-skeletal, mixed, mesic, 0 to 4 percent slopes—7 percent
Batan silty loam, 0 to 2 percent slopes—5 percent
Plays—3 percent

Characteristics of the Bubus Soil, Slightly Saline

Classification: Durorthid Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Convex, higher lake plain terraces
Parent material: Mixed alluvium that is high in content of pyroclastic material
Slope: 2 to 4 percent
Elevation: 5,800 to 6,300 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

Depth: 0 to 6 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13

Depth: 6 to 60 inches
Texture: Stratified sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9 to 10 inches
Water-supplying capacity: 7 inches
Runoff: Slow

Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Bubus Soil

Classification: Durorthid Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Concave, lower lake plain terraces
Parent material: Mixed alluvium that is high in content of pyroclastic material
Slope: 0 to 2 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Typical Profile

Depth: 0 to 6 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 13

Depth: 6 to 60 inches
Texture: Stratified sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9 to 10 inches
Water-supplying capacity: 7 inches
Runoff: Slow

Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low
Contrasting Inclusions

Inclusion 1
Classification: Typic Torriorthents, sandy-skeletal, mixed, mesic
Positions on landscape: Offshore bars
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 2
Classification: Durorthic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flats adjacent to areas of Playas
Distinctive present vegetation: Shadscale, black greasewood, bud sagebrush, bottlebrush squirreltail

Inclusion 3
Positions on landscape: Irregularly shaped sink areas
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Bubus Soil, Slightly Saline
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Bubus Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Bubus Soil, Slightly Saline
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Bubus soil, slightly saline—llc, irrigated, and VIllc, nonirrigated; Bubus soil—VIlls, nonirrigated
Range site: Bubus soil, slightly saline—024X002N; Bubus soil—024X003N; Inclusion 1—024X002N; Inclusion 2—024X003N; Inclusion 3—none

260—Umberland-Wendane association
Positions on landscape: Lake plains, alluvial flats

Composition

Major components:
Umberland silt loam, 0 to 2 percent slopes—50 percent
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—40 percent
Contrasting inclusions:
Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—7 percent
Wendane silt loam, strongly sodic, 0 to 2 percent slopes—3 percent

Characteristics of the Umberland Soil
Classification: Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic
Positions on landscape: Smooth lake plains
Parent material: Silty lacustrine sediment derived from various kinds of rock
Slope: 0 to 2 percent
Elevation: 5,500 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Black greasewood, rubber rabbitbrush, alkali sacaton, sickle saltbush

Typical Profile
Depth: 0 to 11 inches
Texture: Silt loam
Structure: Granular
Consistence: Slightly hard, friable
Reaction: Very strongly alkaline
Salinity: 25 to 40 millimhos per centimeter
Sodicity (SAR): 60 to 80
Depth: 11 to 60 inches
Texture: Clay, silty clay, silty clay loam
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Very strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: 30 to 60 inches
Frequency of flooding: Rare
Permeability: Very slow
Available water capacity: 9.1 to 12.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Wendane Soil
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flats
Parent material: Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,500 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, basin wildrye

Typical Profile
Depth: 0 to 7 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 30 to 50 millimhos per centimeter
Sodicity (SAR): 13 to 25

Depth: 7 to 18 inches
Texture: Silt loam, very fine sandy loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Depth: 18 to 60 inches
Texture: Stratified silt loam to clay loam
Structure: Massive
Consistence: Slightly hard, friable

Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 35

Soil and Water Features
Depth to a seasonal high water table: 30 to 48 inches
Frequency of flooding: Frequent for brief to long periods in February through June
Permeability: Moderately slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions
Inclusion 1
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Slightly dissected, convex alluvial flats
Distinctive present vegetation: Black greasewood, inland saltgrass

Inclusion 2
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Concave, narrow, linear areas bordering recent channels
Distinctive present vegetation: Silver buffaloberry, Torrey quailbush, basin wildrye

Major Uses
Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Irrigated pasture

Suitability for Wildlife Habitat Elements
Umberland Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wendane Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses
Umberland Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength, shrink-swell
Topsoil: Poor—excess salt, excess sodium, too clayey
Daily cover for landfill: Poor—too clayey, hard to pack, excess salt
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Wendane Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Umberland Soil
Drainage: Percs slowly, frost action, excess salt
Irrigation: Wetness, percs slowly
Terraces and diversions: Erodes easily, wetness, percs slowly

Interpretive Groups

Land capability classification: Umberland and Wendane soils—VIW, nonirrigated
Range site: Umberland soil—024X010N; Wendane soil—024X007N; Inclusion 1—024X011N; Inclusion 2—028B057N

261—Umberland-Wendane-Ocala association

Positions on landscape: Lake plains, alluvial flats

Composition

Major components:
Umberland silt loam, 0 to 2 percent slopes—35 percent
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—35 percent
Ocala silt loam, rarely flooded, 0 to 2 percent slopes—20 percent
Contrasting inclusions:
Wendane silt loam, strongly sodic, 0 to 2 percent slopes—6 percent
Playas—4 percent

Characteristics of the Umberland Soil

Classification: Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic
Positions on landscape: Smooth lake plains
Parent material: Silty lacustrine sediment derived from various kinds of rock
Slope: 0 to 2 percent
Elevation: 5,500 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Black greasewood, rubber rabbitbrush, alkali sacaton, sickle saltbush

Typical Profile

Depth: 0 to 7 inches
Texture: Silt loam
Structure: Granular
Consistence: Slightly hard, friable
Reaction: Very strongly alkaline
Salinity: 25 to 40 millimhos per centimeter
Sodicity (SAR): 60 to 80
Depth: 7 to 60 inches
Texture: Clay, silty clay, silty clay loam
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Very strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features

Depth to a seasonal high water table: 30 to 60 inches
Frequency of flooding: Rare
Permeability: Very slow
Available water capacity: 9 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Ponded
Hydrologic group: D
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight, by wind—severe
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Wendane Soil

Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flats
Parent material: Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,500 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F  
Frost-free season: About 120 days  
Dominant present vegetation: Black greasewood, basin wildrye, rubber rabbitbrush, Torrey quailbush

Typical Profile  
Depth: 0 to 7 inches  
Texture: Silt loam  
Structure: Platy  
Consistency: Slightly hard, very friable  
Reaction: Strongly alkaline  
Salinity: 30 to 50 millimhos per centimeter  
Sodicity (SAR): 13 to 25

Depth: 7 to 18 inches  
Texture: Silt loam, very fine sandy loam  
Structure: Subangular blocky  
Consistency: Soft, very friable  
Reaction: Strongly alkaline  
Salinity: 16 to 30 millimhos per centimeter  
Sodicity (SAR): 46 to 60

Depth: 18 to 60 inches  
Texture: Stratified silt loam to clay loam  
Structure: Massive  
Consistency: Slightly hard, friable  
Reaction: Strongly alkaline  
Salinity: 16 to 30 millimhos per centimeter  
Sodicity (SAR): 25 to 35

Soil and Water Features  
Depth to a seasonal high water table: 30 to 48 inches  
Frequency of flooding: Frequent for brief to long periods in February through June  
Permeability: Moderately slow  
Available water capacity: 11 to 12 inches  
Water-supplying capacity: 7 inches  
Runoff: Very slow  
Hydrologic group: C  
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L  
Hazard of erosion: By water—slight; by wind—severe  
Shrink-swell potential: Moderate  
Corrosivity: To steel—high; to concrete—high  
Potential for frost action: High

Characteristics of the Ocala Soil  
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic  
Positions on landscape: Slightly dissected alluvial flats around small Playas  
Parent material: Mixed silty alluvium that includes volcanic ash  
Slope: 0 to 2 percent  
Elevation: 5,500 to 5,700 feet  
Average annual precipitation: About 7 inches

Average annual air temperature: About 49 degrees F  
Frost-free season: About 120 days  
Dominant present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye

Typical Profile  
Depth: 0 to 4 inches  
Texture: Silt loam  
Structure: Platy  
Consistency: Slightly hard, friable  
Reaction: Very strongly alkaline  
Salinity: 40 to 50 millimhos per centimeter  
Sodicity (SAR): 46 to 60

Depth: 4 to 16 inches  
Texture: Silt loam, silty clay loam  
Structure: Massive  
Consistency: Hard, brittle  
Reaction: Strongly alkaline  
Salinity: 25 to 40 millimhos per centimeter  
Sodicity (SAR): 25 to 46

Depth: 16 to 60 inches  
Texture: Silt loam, silty clay loam  
Structure: Massive  
Consistency: Very hard, very firm  
Reaction: Strongly alkaline  
Salinity: 8 to 16 millimhos per centimeter  
Sodicity (SAR): 25 to 46

Soil and Water Features  
Depth to a seasonal high water table: 42 to 60 inches  
Frequency of flooding: Rare  
Permeability: Slow  
Available water capacity: 10 to 12 inches  
Water-supplying capacity: 7 inches  
Runoff: Very slow  
Hydrologic group: C  
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L  
Hazard of erosion: By water—slight; by wind—severe  
Shrink-swell potential: Moderate  
Corrosivity: To steel—high; to concrete—high  
Potential for frost action: High

Contrasting Inclusions

Inclusion 1  
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic  
Positions on landscape: Concave, narrow areas adjacent to channels  
Distinctive present vegetation: Silver buffaloberry, Torrey quailbush, basin wildrye

Inclusion 2  
Positions on landscape: Small, irregularly shaped sink areas
Distinctive present vegetation: None

**Major Uses**

Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Irrigated pasture

**Suitability for Wildlife Habitat Elements**

**Umberland Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Wendane Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Ocala Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Suitability and Limitations for Selected Uses**

**Umberland Soil**
Range seeding: Poor—excess salt, excess sodium, too crusty
Roadfill: Poor—low strength, shrink-swell
Topsoil: Poor—excess salt, excess sodium, too clayey
Daily cover for landfill: Poor—too clayey, hard to pack, excess salt
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Wendane Soil**
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flowing
Local roads and streets: Severe—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Ocala Soil**
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action

**Pond reservoir areas**: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Restrictive Features for Selected Practices**

**Umbeland Soil**
Drainage: Percs slowly, frost action, excess salt
Irrigation: Wetness, percs slowly
Terraces and diversions: Erodes easily, wetness, percs slowly

**Interpretive Groups**

Land capability classification: Umbland, Wendane, and Ocala soils—VIIw, nonirrigated
Range site: Umbland soil—024X0110N; Wendane soil—024X007N; Ocala soil—024X011N; Inclusion 1—028B057N; Inclusion 2—none

262—Umbland silt loam, frequently flooded, 0 to 2 percent slopes

**Composition**

Major component:
Umbland silt loam, frequently flooded, 0 to 2 percent slopes—90 percent
Contrasting inclusions:
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—6 percent
Needle Peak silt loam, occasionally flooded, 0 to 2 percent slopes—3 percent
Wendane silt loam, strongly sodic, 0 to 2 percent slopes—1 percent

**Characteristics of the Umbland Soil**

Classification: Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic
Positions on landscape: Alluvial flats
Parent material: Silty lacustrine sediment derived from various kinds of rock
Slope: 0 to 2 percent
Elevation: 5,500 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Alkali sacaton, alkali cordgrass, inland saltgrass

**Typical Profile**

Depth: 0 to 7 inches
Texture: Silt loam
Structure: Granular
Consistence: Slightly hard, friable
Reaction: Very strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 40
Depth: 7 to 60 inches
Texture: Silty clay, silty clay loam
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Very strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features
Depth to a seasonal high water table: 30 to 60 inches
Frequency of flooding: Frequent for long periods in December through June
Permeability: Very slow
Available water capacity: 10 to 12 inches
Water-supplying capacity: 11 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Convex alluvial flats
Distinctive present vegetation: Black greasewood, basin wildrye

Inclusion 2
Classification: Aquic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Fan skirts over alluvial flats
Distinctive present vegetation: Basin big sagebrush, black greasewood, basin wildrye

Inclusion 3
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Narrow linear areas adjacent to recent channels
Distinctive present vegetation: Silver buffaloberry, Torrey quailbush, basin wildrye

Major Uses
Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Irrigated pasture

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength, shrink-swell
Topsoil: Poor—excess salt, excess sodium, too clayey
Daily cover for landfill: Poor—too clayey, hard to pack, excess salt
Shallow excavations: Moderate—too clayey, wetness, flooding
Local roads and streets: Severe—low strength, flooding, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices
Drainage: Percs slowly, frost action, flooding
Irrigation: Wetness, percs slowly
Terraces and diversions: Erodes easily, wetness, percs slowly

Interpretive Groups
Land capability classification: Umberland soil—VIIw, nonirrigated
Range site: Umberland soil—028B002N; Inclusion 1—024X007N; Inclusion 2—024X006N; Inclusion 3—026B057N

270—Tomel-Laxal association
Positions on landscape: Fan piedmonts

Composition

Major components:
Tomel very gravelly sandy loam, 2 to 8 percent slopes—60 percent
Laxal gravelly loam, 2 to 8 percent slopes—30 percent

Contrasting inclusions:
Izo gravelly sandy loam, 4 to 8 percent slopes—5 percent
Entic Durorthids, loamy-skeletal, mixed, mesic, 4 to 8 percent slopes—5 percent

Characteristics of the Tomel Soil
Classification: Typic Durargids, loamy-skeletal, mixed, mesic, shallow
Positions on landscape: Fan piedmont remnants
Parent material: Alluvium derived from limestone, shale, and chert
Slope: 2 to 8 percent
Elevation: 5,600 to 6,200 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 51 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Galleta, bottlebrush squirreltail, shadscale, Bailey greasewood

**Typical Profile**
Rock fragments on surface: 65 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 3 to 12 inches
Texture: Very gravelly clay loam, very gravelly sandy clay loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Very strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 12 to 27 inches
Material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm

Depth: 27 to 60 inches
Texture: Extremely gravelly sand
Structure: Massive
Consistency: Extremely hard, extremely firm
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

**Soil and Water Features**
Depth to the hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 to 1.4 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

**Characteristics of the Laxal Soil**

Classification: Durorthic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Inset fans
Parent material: Alluvium derived from shale and volcanic rock
Slope: 2 to 8 percent
Elevation: 5,600 to 6,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Shadscale, Bailey greasewood, galleta

**Typical Profile**
Depth: 0 to 10 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 10 to 60 inches
Texture: Stratified very gravelly sandy loam to very gravelly loamy coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 8 to 13

**Soil and Water Features**
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately rapid
Available water capacity: 2.7 to 5.0 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

**Contrasting Inclusions**

Inclusion 1
Classification: Typic Torriorthents, sandy-skeletal, mixed, mesic
Positions on landscape: Areas adjacent to active channels
Lander County, Nevada, South Part

Distinctive present vegetation: Basin big sagebrush, burrobrush, bluegrass

Inclusion 2
Classification: Entic Durorthids, loamy-skeletal, mixed, mesic
Positions on landscape: Convex, higher areas on fan piedmont remnants
Distinctive present vegetation: Black sagebrush, Indian ricegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Tomel Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Laxal Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Tomel Soil
Range seeding: Poor—too arid, droughty, small stones
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, too sandy, small stones
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

Laxal Soil
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Tomel soil—VIIa, nonirrigated; Laxal soil—IVe, irrigated, and VIIa, nonirrigated

Range site: Tomel and Laxal soils—029X017N; Inclusion 1—029X009N; Inclusion 2—029X008N

280—Chiara-Filirat association

Positions on landscape: Fan piedmonts

Composition

Major components:
Chiara gravelly loam, 2 to 8 percent slopes—45 percent
Filirat very gravelly loam, 2 to 4 percent slopes—40 percent

Contrasting inclusions:
Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—7 percent
Entic Durorthids, loamy, mixed, mesic, shallow, 2 to 4 percent slopes—4 percent
Duric Camborthids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—4 percent

Characteristics of the Chiara Soil
Classification: Xerolic Durorthids, loamy, mixed, mesic, shallow
Positions on landscape: The higher summits of fan piedmont remnants
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,200 to 5,700 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 5 to 16 inches
Texture: Silt loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Depth: 16 inches
Material: Indurated hardpan
Structure: Massive
Consistence: Extremely hard, extremely firm
Soil and Water Features

Depth to the hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.3 to 2.7 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Filiran Soil

Classification: Haploxerolic Natudargids, fine, montmorillonitic, mesic
Positions on landscape: The lower, broad summits of slightly dissected fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,200 to 5,700 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 7 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 7 to 12 inches
Texture: Gravelly silt loam
Structure: Platy
Consistence: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 12 to 33 inches
Texture: Clay, gravelly clay
Structure: Prismatic
Consistence: Very hard, very firm
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 25

Depth: 33 to 60 inches
Material: Cemented hardpan

Soil and Water Features

Depth to the hardpan: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 4.5 to 5.5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—2;
wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Durixerolic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Concave, narrow inset fans
Distinctive present vegetation: Wyoming big sagebrush, bluegrass, Thurber needlegrass

Inclusion 2
Classification: Entic Durorthids, loamy, mixed, mesic, shallow
Positions on landscape: Toe slopes of fan piedmont remnants at the lower elevations
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 3
Classification: Duric Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, shadscale, bluegrass, bottlebrush squirreltail

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Chiara Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Filiran Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Suitability and Limitations for Selected Uses

Chiara Soil
Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Filiran Soil
Range seeding: Poor—small stones, excess sodium
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, excess sodium
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Moderate—cemented pan, slope
Embankments, dikes, and levees: Severe—excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Chiara soil—I, irrigated, and VII, nonirrigated; Filiran soil—VII, nonirrigated
Range site: Chiara and Filiran soils—028B010N;
  Inclusion 1—028B010N; Inclusion 2—024X002N;
  Inclusion 3—024X045N

284—Chiara-Dewar association
Positions on landscape: Fan piedmonts

Composition
Major components:
Chiara gravelly loam, 2 to 8 percent slopes—55 percent
Dewar gravelly loam, 2 to 8 percent slopes—30 percent
Contrasting inclusions:
Orovada gravelly loam, 2 to 8 percent slopes—9 percent
Typic Durargids, loamy, mixed, mesic, shallow, 2 to 8 percent slopes—3 percent
Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—3 percent

Characteristics of the Chiara Soil
Classification: Xerollic Durorthids, loamy, mixed, mesic, shallow

Positions on landscape: The lower fan piedmont remnants
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,900 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 5 to 16 inches
Texture: Silt loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Depth: 16 inches
Material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm

Soil and Water Features
Depth to the hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.2 to 2.7 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1;
  wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Dewar Soil
Classification: Xerollic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: The higher fan piedmont remnants
Parent material: Loess and mixed silty alluvium that include volcanic ash
Slope: 2 to 8 percent
Elevation: 5,900 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass

**Typical Profile**

**Depth:** 0 to 4 inches
**Texture:** Gravelly loam
**Structure:** Platy
**Consistence:** Slightly hard, friable
**Reaction:** Mildly alkaline
**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 4 to 14 inches
**Texture:** Gravelly clay loam
**Structure:** Subangular blocky
**Consistence:** Slightly hard, friable
**Reaction:** Mildly alkaline
**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 14 to 50 inches
**Material:** Indurated hardpan
**Structure:** Platy
**Consistence:** Extremely hard, extremely firm

**Soil and Water Features**

**Depth to the hardpan:** 13 to 20 inches
**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None
**Permeability:** Moderately slow
**Available water capacity:** 1.7 to 2.3 inches
**Water-supplying capacity:** 8 inches
**Runoff:** Medium
**Hydrologic group:** D

**Erosion factors (upper layer):** K value—0.37; T value—1; wind erodibility group—7

**Hazard of erosion:** By water—slight; by wind—slight
**Shrink-swell potential:** Moderate
**Corrosivity:** To steel—high; to concrete—low
**Potential for frost action:** Moderate

**Contrasting Inclusions**

**Inclusion 1**
**Classification:** Durixerollic Camborthids, coarse-loamy, mixed, mesic
**Positions on landscape:** Inset fans
**Distinctive present vegetation:** Wyoming big sagebrush, Thurber needlegrass, bluegrass

**Inclusion 2**
**Classification:** Typic Durargids, loamy, mixed, mesic, shallow

**Positions on landscape:** Convex, dissected fan aprons
**Distinctive present vegetation:** Shadscale, bud sagebrush, bottlebrush squirreltail

**Inclusion 3**
**Classification:** Durixerollic Camborthids, loamy-skeletal, mixed, mesic
**Positions on landscape:** Toe slopes of fan piedmont remnants
**Distinctive present vegetation:** Wyoming big sagebrush, needlegrass, bluegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Chiara Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Dewar Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Chiara Soil**
Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Dewar Soil**
Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**

Land capability classification: Chiara and Dewar soils—IVe, irrigated, and Vlls, nonirrigated
**Range site:** Chiara and Dewar soils—028B010N;
Inclusion 1—028B010N; Inclusion 2—028B017N;
Inclusion 3—028B010N
290—Creemon silt loam, 0 to 2 percent slopes

Positions on landscape: Fan skirts, the lower fan piedmonts

**Composition**

Major component: Creemon silt loam, 0 to 2 percent slopes—85 percent
Contrasting inclusions: Broyles very fine sandy loam, 0 to 2 percent slopes—5 percent
Relley silt loam, 0 to 2 percent slopes—5 percent
Wholan very fine sandy loam, 0 to 2 percent slopes—5 percent

**Characteristics of the Creemon Soil**

Classification: Duric Camborthids, coarse-silty, mixed, mesic

Positions on landscape: Fan skirts

Parent material: Mixed silty alluvium that includes volcanic ash

Slope: 0 to 2 percent

Elevation: 5,100 to 6,200 feet

Average annual precipitation: About 7 inches

Average annual air temperature: About 49 degrees F

Frost-free season: About 110 days

Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreletail

**Typical Profile**

Depth: 0 to 10 inches

Texture: Silt loam

Structure: Platy

Consistence: Slightly hard, very friable

Reaction: Moderately alkaline

Salinity: 2 to 4 millimhos per centimeter

Sodicity (SAR): 0 to 2

Depth: 10 to 15 inches

Texture: Silt loam

Structure: Massive

Consistence: Slightly hard, very friable

Reaction: Strongly alkaline

Salinity: 4 to 8 millimhos per centimeter

Sodicity (SAR): 2 to 10

Depth: 15 to 60 inches

Texture: Stratified very fine sandy loam to silt loam

Structure: Massive

Consistence: Slightly hard, very friable

Reaction: Strongly alkaline

Salinity: 8 to 16 millimhos per centimeter

Sodicity (SAR): 13 to 25

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderate

Available water capacity: 10 to 12 inches

Water-supplying capacity: 7 inches

Runoff: Slow

Hydrologic group: B

Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—5

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—high

Potential for frost action: Low

**Contrasting Inclusions**

Inclusion 1

Classification: Duric Camborthids, coarse-loamy, mixed, mesic

Positions on landscape: The higher fan skirt margins

Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirrelettail

Inclusion 2

Classification: Duric Camborthids, fine-silty, mixed, mesic

Positions on landscape: The lower fan skirt margins

Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirrelettail

Inclusion 3

Classification: Typic Camborthids, coarse-silty, mixed, mesic

Positions on landscape: Fan aprons, inset fans

Distinctive present vegetation: Winterfat, bottlebrush squirrelettail

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Suitability and Limitations for Selected Uses**

Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Restrictive Features for Selected Practices**

Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

**Interpretive Groups**

*Land capability classification:* Creemon soil—Ilc, irrigated, and VIIc, nonirrigated
*Range site:* Creemon soil—024X002N; Inclusions 1 and 2—024X002N; Inclusion 3—024X004N

**291—Creemon-Wholan association**

*Positions on landscape:* Fan skirts, the lower fan piedmonts

**Composition**

*Major components:*
- Creemon silt loam, 0 to 2 percent slopes—50 percent
- Wholan silt loam, 0 to 2 percent slopes—20 percent
- Wholan silt loam, alkaline, 0 to 2 percent slopes—15 percent

*Contrasting inclusions:*
- Caphor very fine sandy loam, 0 to 2 percent slopes—7 percent
- Batan silt loam, 0 to 2 percent slopes—4 percent
- Rasille silt loam, 0 to 2 percent slopes—4 percent

**Characteristics of the Creemon Soil**

*Classification:* Duric Camborthids, coarse-silty, mixed, mesic
*Positions on landscape:* Smooth fan skirts
*Parent material:* Mixed silty alluvium that includes volcanic ash
*Slope:* 0 to 2 percent
*Elevation:* 5,600 to 5,800 feet
*Average annual precipitation:* About 7 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

**Typical Profile**

*Depth:* 0 to 10 inches
*Texture:* Silt loam
*Structure:* Platy
*Consistence:* Slightly hard, very friable
*Reaction:* Moderately alkaline
*Salinity:* 2 to 4 millimhos per centimeter
*Sodicity (SAR):* 0 to 5

*Depth:* 10 to 15 inches
*Texture:* Silt loam
*Structure:* Massive
*Consistence:* Slightly hard, very friable
*Reaction:* Strongly alkaline
*Salinity:* 4 to 8 millimhos per centimeter
*Sodicity (SAR):* 0 to 5

*Sodicity (SAR):* 2 to 10
*Depth:* 15 to 60 inches
*Texture:* Stratified very fine sandy loam to silt loam
*Structure:* Massive
*Consistence:* Slightly hard, very friable
*Reaction:* Strongly alkaline
*Salinity:* 8 to 16 millimhos per centimeter
*Sodicity (SAR):* 13 to 25

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderate
*Available water capacity:* 10 to 12 inches
*Water-supplying capacity:* 7 inches
*Runoff:* Slow
*Hydrologic group:* B
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5
*Hazard of erosion:* By water—slight; by wind—slight
*Shrink-swell potential:* Low
*Corrosivity:* To steel—high; to concrete—high
*Potential for frost action:* Low

**Characteristics of the Wholan Soil**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic
*Positions on landscape:* Smooth inset fans
*Parent material:* Loess mantle over silty alluvium
*Slope:* 0 to 2 percent
*Elevation:* 5,600 to 5,800 feet
*Average annual precipitation:* About 8 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 120 days
*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat

**Typical Profile**

*Depth:* 0 to 13 inches
*Texture:* Silt loam
*Structure:* Platy
*Consistence:* Slightly hard, very friable
*Reaction:* Mildly alkaline
*Salinity:* 2 to 4 millimhos per centimeter
*Sodicity (SAR):* 0 to 2
*Depth:* 13 to 60 inches
*Texture:* Silt loam, very fine sandy loam
*Structure:* Massive
*Consistence:* Slightly hard, very friable
*Reaction:* Strongly alkaline
*Salinity:* 4 to 8 millimhos per centimeter
*Sodicity (SAR):* 0 to 5
Soil and Water Features

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* Rare
*Permeability:* Moderate
*Available water capacity:* 10 to 11 inches
*Water-supplying capacity:* 7 inches
*Runoff:* Slow
*Hydrologic group:* B
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6
*Hazard of erosion:* By water—slight; by wind—slight
*Shrink-swell potential:* Low
*Corrosivity:* To steel—high; to concrete—low
*Potential for frost action:* Low

**Characteristics of the Wholan Soil, Alkaline**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic
*Positions on landscape:* Slightly dissected
*Parent material:* Loess mantle over silty alluvium
*Slope:* 0 to 2 percent
*Elevation:* 5,600 to 5,800 feet
*Average annual precipitation:* About 8 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 120 days
*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat

**Typical Profile**

*Depth:* 0 to 13 inches
*Texture:* Silt loam
*Structure:* Platy
*Consistency:* Slightly hard, very friable
*Reaction:* Strongly alkaline
*Salinity:* 2 to 4 millimhos per centimeter
*Sodicity (SAR):* 0 to 2
*Depth:* 13 to 60 inches
*Texture:* Silt loam, very fine sandy loam
*Structure:* Massive
*Consistency:* Slightly hard, very friable
*Reaction:* Strongly alkaline
*Salinity:* 4 to 8 millimhos per centimeter
*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* Rare
*Permeability:* Moderate
*Available water capacity:* 10 to 11 inches
*Water-supplying capacity:* 7 inches
*Runoff:* Slow
*Hydrologic group:* B

**Erosion factors (upper layer):** K value—0.55; T value—5; wind erodibility group—6
**Hazard of erosion:** By water—slight; by wind—slight
**Shrink-swell potential:** Low
**Corrosivity:** To steel—high; to concrete—low
**Potential for frost action:** Low

**Contrasting Inclusions**

**Inclusion 1**
*Classification:* Durothidic Torriorthents, coarse-loamy, mixed (calcareous), mesic
*Positions on landscape:* Fan skirts
*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirreltail

**Inclusion 2**
*Classification:* Durothidic Torriorthents, fine-silty, mixed (calcareous), mesic
*Positions on landscape:* Adjacent alluvial flat remnants near the lower lying areas
*Distinctive present vegetation:* Shadscale, black greasewood

**Inclusion 3**
*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic
*Positions on landscape:* Shallow fan drainageways
*Distinctive present vegetation:* Wyoming big sagebrush, bluegrass, needlegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Creemon Soil**
*Wild herbaceous plants (nonirrigated):* Very poor
*Shrubs (nonirrigated):* Very poor

**Wholan Soil**
*Wild herbaceous plants (nonirrigated):* Poor
*Shrubs (nonirrigated):* Poor

**Wholan Soil, Alkaline**
*Wild herbaceous plants (nonirrigated):* Poor
*Shrubs (nonirrigated):* Poor

**Suitability and Limitations for Selected Uses**

**Creemon Soil**
*Range seeding:* Poor—too arid, excess salt
*Roadfill:* Good
*Topsoil:* Poor—thin layer
*Daily cover for landfill:* Good
*Shallow excavations:* Slight
*Local roads and streets:* Slight
*Pond reservoir areas:* Moderate—seepage
*Embankments, dikes, and levees:* Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Wholan Soil
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—floodimg
Pond reservoir areas: Moderate—seepage
Embarkments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Wholan Soil, Alkaline
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—floodimg
Pond reservoir areas: Moderate—seepage
Embarkments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices
Creemon Soil
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily
Wholan Soil
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily
Wholan Soil, Alkaline
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups
Land capability classification: Creemon, Wholan, and Wholan, alkaline, soils—IIC, irrigated, and VILC, nonirrigated
Range site: Creemon soil—024X002N; Wholan soil—024X004N; Wholan soil, alkaline—024X012N;
Inclusion 1—028B017N; Inclusion 2—024X003N; Inclusion 3—028B010N

295—Creemon-Cren association
Positions on landscape: Fan skirts, the lower fan piedmonts

Composition
Major components:
Creemon silt loam, 0 to 2 percent slopes—55 percent
Cren silt loam, 0 to 2 percent slopes—30 percent
Contrasting inclusions:
Xeric Torriorthents, coarse-silty, mixed (calcaceous), mesic, 0 to 2 percent slopes—5 percent
Typic Torriorthents, coarse-silty, mixed (calcaceous), mesic, 0 to 2 percent slopes—5 percent
Xeric Torriorthents, coarse-loamy, mixed (calcaceous), mesic, 0 to 2 percent slopes—5 percent

Characteristics of the Creemon Soil
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Mixed siltly alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,200 to 6,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile
Depth: 0 to 10 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 10 to 15 inches
Texture: Silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 15 to 60 inches
Texture: Stratified very fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate  
Available water capacity: 10 to 12 inches  
Water-supplying capacity: 7 inches  
Runoff: Slow  
Hydrologic group: B  
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5  
Hazard of erosion: By water—slight; by wind—slight  
Shrink-swell potential: Low  
Corrosivity: To steel—high; to concrete—high  
Potential for frost action: Low  

Characteristics of the Cren Soil  
Classification: Durothric Torriorthents, coarse-silty, mixed (calcareous), mesic  
Positions on landscape: Inset fans  
Parent material: Mixed alluvium that includes volcanic ash  
Slope: 0 to 2 percent  
Elevation: 5,200 to 6,100 feet  
Average annual precipitation: About 7 inches  
Average annual air temperature: About 49 degrees F  
Frost-free season: About 120 days  
Dominant present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush  

Typical Profile  
Depth: 0 to 7 inches  
Texture: Silt loam  
Structure: Platy  
Consistency: Slightly hard, very friable  
Reaction: Moderately alkaline  
Salinity: 2 to 4 millimhos per centimeter  
Sodicity (SAR): 0 to 2  
Depth: 7 to 26 inches  
Texture: Silt loam  
Structure: Massive  
Consistency: Slightly hard, very friable  
Reaction: Strongly alkaline  
Salinity: 2 to 4 millimhos per centimeter  
Sodicity (SAR): 0 to 2  
Depth: 26 to 60 inches  
Texture: Silt loam  
Structure: Massive  
Consistency: Slightly hard, very friable  
Reaction: Strongly alkaline  
Salinity: 16 to 30 millimhos per centimeter  
Sodicity (SAR): 25 to 46  

Soil and Water Features  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Moderate  

Available water capacity: 11 to 12 inches  
Water-supplying capacity: 7 inches  
Runoff: Slow  
Hydrologic group: B  
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L  
Hazard of erosion: By water—slight; by wind—severe  
Shrink-swell potential: Low  
Corrosivity: To steel—high; to concrete—high  
Potential for frost action: Low  

Contrasting Inclusions  
Inclusion 1  
Classification: Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic  
Positions on landscape: Fan drainageways  
Distinctive present vegetation: Basin big sagebrush, black greasewood, basin wildrye  

Inclusion 2  
Classification: Typic Torriorthents, coarse-silty, mixed (calcareous), mesic  
Positions on landscape: The lower margins of fan skirts  
Distinctive present vegetation: Shadscale, bud sagebrush  

Inclusion 3  
Classification: Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic  
Positions on landscape: Active channel banks  
Distinctive present vegetation: Big sagebrush, black greasewood, basin wildrye  

Major Current Uses  
Livestock grazing, wildlife habitat  

Suitability for Wildlife Habitat Elements  
Creemon Soil  
Wild herbaceous plants (nonirrigated): Very poor  
Shrubs (nonirrigated): Very poor  
Cren Soil  
Wild herbaceous plants (nonirrigated): Very poor  
Shrubs (nonirrigated): Very poor  

Suitability and Limitations for Selected Uses  
Creemon Soil  
Range seeding: Poor—too arid, excess salt  
Roadfill: Good  
Topsoil: Poor—thin layer  
Daily cover for landfill: Good  
Shallow excavations: Slight  
Local roads and streets: Slight  
Pond reservoir areas: Moderate—seepage  
Enterments, dikes, and levees: Severe—piping, excess salt  
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Cren Soil
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Fair—thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Moderate—seepage
Embarkments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Creemon Soil
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Cren Soil
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups
Land capability classification: Creemon and Cren soils—Ilc, irrigated, and Vllc, nonirrigated
Range site: Creemon and Cren soils—024X002N;
Inclusion 1—024X006N; Inclusion 2—024X003N;
Inclusion 3—024X041N

296—Creemon-Hessing association

Positions on landscape: Fan skirts, the lower fan piedmonts

Composition

Major components:
Creemon silt loam, 0 to 2 percent slopes—65 percent
Hessing silt loam, 0 to 2 percent slopes—20 percent
Contrasting inclusions:
Durixerollic Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—8 percent
Duric Camborthids, coarse-loamy, mixed, mesic, 0 to 2 percent slopes—4 percent
Typic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—3 percent

Characteristics of the Creemon Soil

Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Convex fan skirts
Parent material: Mixed silty alluvium that includes volcanic ash

Slope: 0 to 2 percent
Elevation: 5,100 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile
Depth: 0 to 10 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 10 to 15 inches
Texture: Silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Depth: 15 to 60 inches
Texture: Stratified very fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Hessing Soil

Classification: Typic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Broad inset fans
Parent material: Loess and silty alluvium that include volcanic ash
Slope: 0 to 2 percent
Elevation: 5,100 to 5,600 feet  
Average annual precipitation: About 7 inches  
Average annual air temperature: About 49 degrees F  
Frost-free season: About 120 days  
Dominant present vegetation: Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

**Typical Profile**

**Depth:** 0 to 4 inches  
**Texture:** Silt loam  
**Structure:** Platy  
**Consistency:** Slightly hard, very friable  
**Reaction:** Moderately alkaline  
**Salinity:** 2 to 4 millimhos per centimeter  
**Sodicity (SAR):** 0 to 5  

**Depth:** 4 to 11 inches  
**Texture:** Silty clay loam, silt loam  
**Structure:** Subangular blocky  
**Consistency:** Hard, friable  
**Reaction:** Moderately alkaline  
**Salinity:** 2 to 4 millimhos per centimeter  
**Sodicity (SAR):** 0 to 5  

**Depth:** 11 to 18 inches  
**Texture:** Very fine sandy loam, silt loam  
**Structure:** Massive  
**Consistency:** Slightly hard, very friable  
**Reaction:** Strongly alkaline  
**Salinity:** 2 to 4 millimhos per centimeter  
**Sodicity (SAR):** 0 to 5  

**Depth:** 18 to 30 inches  
**Texture:** Gravelly loam  
**Structure:** Massive  
**Consistency:** Slightly hard, very friable  
**Reaction:** Strongly alkaline  
**Salinity:** 8 to 16 millimhos per centimeter  
**Sodicity (SAR):** 10 to 25  

**Depth:** 30 to 60 inches  
**Texture:** Very gravelly sand  
**Structure:** Single grain  
**Consistency:** Loose  
**Reaction:** Moderately alkaline  
**Salinity:** 16 to 30 millimhos per centimeter  
**Sodicity (SAR):** 25 to 46

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Moderate  
**Available water capacity:** 6.4 to 7.5 inches  
**Water-supplying capacity:** 7 inches  
**Runoff:** Slow  
**Hydrologic group:** B  
**Erosion factors (upper layer):** K value—0.55; T value—3; wind erodibility group—5  
**Hazard of erosion:** By water—slight; by wind—slight  
**Shrink-swell potential:** Moderate  
**Corrosivity:** To steel—high; to concrete—high  
**Potential for frost action:** Low

**Contrasting Inclusions**

**Inclusion 1**

**Classification:** Durixerollic Camborthids, coarse-silty, mixed, mesic  
**Positions on landscape:** Channel banks  
**Distinctive present vegetation:** Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

**Inclusion 2**

**Classification:** Duric Camborthids, coarse-loamy, mixed, mesic  
**Positions on landscape:** Fan skirt margins  
**Distinctive present vegetation:** Shadscale, winterfat, bud sagebrush

**Inclusion 3**

**Classification:** Typic Camborthids, loamy-skeletal, mixed, mesic  
**Positions on landscape:** Channels  
**Distinctive present vegetation:** Shadscale, bud sagebrush, bottlebrush squirreltail

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Creemon Soil**

Wild herbaceous plants (nonirrigated): Very poor  
Shrubs (nonirrigated): Very poor

**Hessing Soil**

Wild herbaceous plants (nonirrigated): Poor  
Shrubs (nonirrigated): Poor

**Suitability and Limitations for Selected Uses**

**Creemon Soil**

Range seeding: Poor—too arid, excess salt  
Roadfill: Good  
Topsoil: Poor—thin layer  
Daily cover for landfill: Good  
Shallow excavations: Slight  
Local roads and streets: Slight  
Pond reservoir areas: Moderate—seepage  
Embankments, dikes, and levees: Severe—piping, excess salt  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines

**Hessing Soil**

Range seeding: Poor—too arid  
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

Restrictive Features for Selected Practices
Creemon Soil
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Hessing Soil
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups
Land capability classification: Creemon soil—IIc, irrigated, and VIIc, nonirrigated; Hessing soil—IIIs, irrigated, and VIIIs, nonirrigated
Range site: Creemon and Hessing soils—024X002N; Inclusion 1—024X020N; Inclusion 2—024X014N; Inclusion 3—024X002N

297—Creemon-Rasille-Tulase association
Positions on landscape: Fan skirts, the lower fan piedmonts

Composition
Major components:
Creemon silt loam, 0 to 2 percent slopes—45 percent
Rasille very fine sandy loam, 0 to 2 percent slopes—20 percent
Tulase very fine sandy loam, 0 to 2 percent slopes—20 percent
Contrasting inclusions:
Batan very fine sandy loam, 0 to 2 percent slopes—5 percent
Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent
Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—5 percent

Characteristics of the Creemon Soil
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: The lower fan skirts
Parent material: Mixed silty alluvium that includes volcanic ash

Slope: 0 to 2 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile
Depth: 0 to 10 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 10 to 15 inches
Texture: Silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 15 to 60 inches
Texture: Stratified very fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Rasille Soil
Classification: Durixerollic Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Concave inset fans
Parent material: Silty alluvium derived from loess and various kinds of rock
Slope: 0 to 2 percent
Lander County, Nevada, South Part

Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Depth: 0 to 6 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 6 to 15 inches
Texture: Silt loam
Structure: Prismatic
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 15 to 60 inches
Texture: Silt loam, very fine sandy loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10 to 12 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Convex, lower fan skirt margins
Distinctive present vegetation: Shadscale

Inclusion 2
Classification: Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Big sagebrush, bluegrass, rabbitbrush

Inclusion 3
Classification: Durixerollic Camborthents, loamy-skeletal, mixed, mesic
Positions on landscape: Adjacent remnant beaches and offshore bars
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, bluegrass
**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Creemion Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Rasille Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Tulase Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Creemion Soil**
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Rasille Soil**
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Tulase Soil**
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Good
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Restrictive Features for Selected Practices**

**Creemion Soil**
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

**Rasille Soil**
Drainage: Deep to water
Irrigation: Soil blowing, erodes easily
Terraces and diversions: Erodes easily, soil blowing

**Tulase Soil**
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

**Interpretive Groups**
Land capability classification: Creemion soil—IItc, irrigated, and VItc, nonirrigated; Rasille and Tulase soils—IItc, irrigated, and VItc, nonirrigated
Range site: Creemion soil—024X003N; Rasille soil—024X0041N; Tulase soil—024X020N; Inclusion 1—024X003N; Inclusion 2—024X041N; Inclusion 3—024X020N

298—Creemion-Misad association

**Composition**
Major components:
Creemion silt loam, 0 to 2 percent slopes—60 percent
Misad gravelly sandy loam, 2 to 4 percent slopes—25 percent

Contrasting inclusions:
Broyles very fine sandy loam, 0 to 2 percent slopes—5 percent
Batan silt loam, 0 to 2 percent slopes—5 percent
Orovada fine sandy loam, 0 to 2 percent slopes—3 percent
Duruthic Xeric Torriorthents, coarse-silty, mixed (calcereous), mesic, 0 to 2 percent slopes—2 percent

**Characteristics of the Creemion Soil**
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Smooth beach plain terraces
Parent material: Mixed silty alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

**Typical Profile**
Depth: 0 to 10 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 10 to 15 inches
Texture: Silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 15 to 45 inches
Texture: Stratified very fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 45 to 60 inches
Texture: Stratified gravelly very fine sandy loam to fine sandy loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Misad Soil
Classification: Durorthid Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Offshore bars
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 4 percent
Elevation: 5,600 to 5,800 feet

Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile
Depth: 0 to 7 inches
Texture: Gravelly sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 7 to 31 inches
Texture: Stratified fine sandy loam to very gravelly sandy loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 31 to 60 inches
Texture: Stratified very gravelly loamy sand to extremely gravelly coarse sand
Structure: Massive
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.0 to 4.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Adjacent fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Inclusion 2
Classification: Duroadithic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flats between bars
Distinctive present vegetation: Shadscale, black greasewood, bud sagebrush

Inclusion 3
Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Channels
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Inclusion 4
Classification: Durothidic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic
Positions on landscape: Concave lagoons
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Creemon Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Misad Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses
Creemon Soil
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—pipin, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Misad Soil
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage

Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Restrictive Features for Selected Practices
Creemon Soil
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups
Land capability classification: Creemon soil—I1c, irrigated, and VIIIc, nonirrigated; Misad soil—IVe, irrigated, and VIIIa, nonirrigated
Range site: Creemon and Misad soils—024X002N; Inclusion 1—024X002N; Inclusion 2—024X003N; Inclusions 3 and 4—024X020N

301—Cren-Ocala-Playas association
Positions on landscape: Fan skirts, bolson floors

Composition
Major components:
Cren silt loam, strongly saline-alkali, 0 to 2 percent slopes—40 percent
Ocala silt loam, rarely flooded, 0 to 2 percent slopes—30 percent
Playas—15 percent
Contrasting inclusions:
Ocala silt loam, occasionally flooded, 0 to 2 percent slopes—7 percent
Batan silt loam, 0 to 2 percent slopes—6 percent
Isolde fine sand, 4 to 30 percent slopes—2 percent

Characteristics of the Cren Soil
Classification: Duroadithic Torriorthents, coarse-silty, mixed (calcareous), mesic
Positions on landscape: Fan skirts
Parent material: Mixed alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,100 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush, black greasewood

Typical Profile
Depth: 0 to 7 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 25 to 30 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 7 to 26 inches
Texture: Silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 16 to 25 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 26 to 60 inches
Texture: Silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Ocala Soil

Classification: Aeric Halaquepts, fine-silty, mixed
(calcareous), mesic
Positions on landscape: Alluvial flats
Parent material: Mixed silty alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,100 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye

Typical Profile

Depth: 0 to 4 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Very strongly alkaline
Salinity: 30 to 50 millimhos per centimeter
Sodicity (SAR): 46 to 60
Depth: 4 to 16 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistency: Hard, brittle
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 16 to 60 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistency: Very hard, very firm
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features

Depth to a seasonal high water table: 42 to 60 inches
Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 11 to 13 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.43; T value—5;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Playas

Positions on landscape: Dry lake extensions; small, irregularly shaped sink areas
Slope: Less than 1 percent
Elevation: 5,100 to 5,200 feet

Contrasting Inclusions

Inclusion 1
Classification: Aeric Halaquepts, fine-silty, mixed
(calcareous), mesic
Positions on landscape: The lower lake plains
Distinctive present vegetation: Black greasewood, basin wildrye

Inclusion 2
Classification: Durorthic Torriorthents, fine-silty, mixed
(calcareous), mesic
Positions on landscape: Alluvial flat remnants
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 3
Classification: Typic Torripsamments, mixed, mesic
Positions on landscape: Sand dunes
Distinctive present vegetation: Fourwing saltbush, rubber rabbitbrush, black greasewood

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Cren Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Ocala Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Suitability and Limitations for Selected Uses**

**Cren Soil**
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Moderate—seepage
Embarkments, dikes, and levees: Severe—piping, excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Ocala Soil**
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action
Pond reservoir areas: Slight
Embarkments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Restrictive Features for Selected Practices**

**Cren Soil**
Drainage: Deep to water
Irrigation: Eroses easily, excess salt, excess sodium
Terraces and diversions: Eroses easily

**Interpretive Groups**
Land capability classification: Cren soil—IIs, irrigated, and VIIIs, nonirrigated; Ocala soil—VIIw, nonirrigated; Playas—VIIIw, nonirrigated
Range site: Cren soil—024X003N; Ocala soil—024X011N; Playas—none; Inclusion 1—024X007N; Inclusion 2—024X003N; Inclusion 3—027X016N

**310—Yobe-Kawich-Playas association**

**Positions on landscape:** Alluvial flats

**Composition**
Major components:
Yobe silt loam, 0 to 2 percent slopes—45 percent
Kawich fine sand, 4 to 30 percent slopes—35 percent
Playas—10 percent
Contrasting inclusions:
Typic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—6 percent
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—4 percent

**Characteristics of the Yobe Soil**
Classification: Aerlic Halicrypts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flats
Parent material: Mixed silty lacustrine sediment
Slope: 0 to 2 percent
Elevation: 5,500 to 5,600 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 51 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, basin wildrye, rubber rabbitbrush, alkali sacaton

**Typical Profile**
Depth: 0 to 16 inches
Texture: Silt loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 25 to 40 millimhos per centimeter
Sodicity (SAR): 46 to 60
Depth: 16 to 60 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 16 to 25 millimhos per centimeter
Sodicity (SAR): 25 to 46

**Soil and Water Features**
Depth to a seasonal high water table: 36 to 60 inches
Frequency of flooding: Occasional for brief to long periods in January through April
Permeability: Moderately slow
Available water capacity: 10 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

**Characteristics of the Kawich Soil**
Classification: Typic Torripsamments, mixed, mesic
Positions on landscape: Convex dunes over alluvial flats
Parent material: Eolian sand derived from various kinds of rock
Slope: 4 to 30 percent
Elevation: 5,500 to 5,600 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 53 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Needleandthread, Indian ricegrass, fourwing saltbush, black greasewood

**Typical Profile**
Depth: 0 to 4 inches
Texture: Fine sand
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Depth: 4 to 42 inches
Texture: Fine sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Depth: 42 to 60 inches
Texture: Fine sand
Structure: Massive
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter

**Soil and Water Features**
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very rapid
Available water capacity: 3.0 to 4.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (upper layer): K value—0.15; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

**Characteristics of the Playas**
Positions on landscape: Small, irregularly shaped sink areas
Slope: Less than 1 percent
Elevation: 5,500 to 5,550 feet

**Contrasting Inclusions**

**Inclusion 1**
Classification: Typic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants
Distinctive present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

**Inclusion 2**
Classification: Aeric Halloquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: The lower alluvial flats
Distinctive present vegetation: Black sagebrush, rabbitbrush, basin wildrye

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Yobe Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Poor
Shallow water areas: Fair

**Kawich Soil**
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

**Suitability and Limitations for Selected Uses**

**Yobe Soil**
Range seeding: Poor—excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Kawich Soil**
Range seeding: Poor—too arid, droughty, too sandy
Roadfill: Fair—slope
Topsoil: Poor—too sandy, slope
Daily cover for landfill: Poor—too sandy, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**

Land capability classification: Yobe soil—VIIw, nonirrigated; Kawich soil—VIIw, nonirrigated; Playas—VIIIw, nonirrigated
Range site: Yobe soil—024X011N; Kawich soil—027X016N; Playas—none; Inclusion 1—024X003N; Inclusion 2—024X007N

---

**320—Newpass-Jung association**

**Positions on landscape:** Foothills

**Composition**

Major components:

Newpass very gravelly fine sandy loam, 15 to 30 percent slopes, very stony—60 percent
Jung very cobbly loam, 15 to 30 percent slopes—30 percent

Contrasting inclusions:

Haplic Durargids, clayey-skeletal, mixed, mesic, 15 to 30 percent slopes—5 percent
Rock outcrop—3 percent

Haploxerolic Durargids, fine, montmorillonitic, mesic, 8 to 15 percent slopes—2 percent

**Characteristics of the Newpass Soil**

**Classification:** Haploxerolic Nadurargids, fine, montmorillonitic, mesic

**Positions on landscape:** North-facing side slopes of foothills

**Parent material:** Residuum derived from volcanic and metavolcanic rock

**Slope:** 15 to 30 percent

**Elevation:** 5,200 to 7,000 feet

**Average annual precipitation:** About 9 inches

**Average annual air temperature:** About 48 degrees F

**Frost-free season:** About 110 days

**Dominant present vegetation:** Bluegrass, Thurber needlegrass, Wyoming big sagebrush

**Typical Profile**

**Rock fragments on surface:** 10 percent cobbles, 75 percent pebbles

**Depth:** 0 to 4 inches

**Texture:** Very gravelly fine sandy loam

**Structure:** Platy

**Consistence:** Slightly hard, very friable

**Reaction:** Mildly alkaline

**Salinity:** 0 to 4 millimhos per centimeter

**Sodicity (SAR):** 0 to 5

**Depth:** 4 to 14 inches

**Texture:** Clay

**Structure:** Prismatic

**Consistence:** Hard, firm

**Reaction:** Moderately alkaline

**Salinity:** 4 to 8 millimhos per centimeter

**Sodicity (SAR):** 13 to 25

**Depth:** 14 to 24 inches

**Texture:** Very cobbly silty clay, very gravelly clay

**Structure:** Subangular blocky

**Consistence:** Hard, firm

**Reaction:** Strongly alkaline

**Salinity:** 2 to 4 millimhos per centimeter

**Sodicity (SAR):** 5 to 13

**Depth:** 24 to 26 inches

**Material:** Cemented hardpan

**Depth:** 26 inches

**Material:** Unweathered bedrock

**Soil and Water Features**

**Depth to the hardpan:** 20 to 29 inches

**Depth to bedrock:** 21 to 36 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Slow

**Available water capacity:** 2.6 to 3.2 inches

**Water-supplying capacity:** 9 inches

**Runoff:** Medium

**Hydrologic group:** C

**Erosion factors (upper layer):** K value—0.15; T value—2; wind erodibility group—5

**Hazard of erosion:** By water—slight; by wind—slight

**Shrink-swell potential:** High

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Low

**Characteristics of the Jung Soil**

**Classification:** Lithic Xerolic Haplargids, clayey-skeletal, montmorillonitic, mesic

**Positions on landscape:** South-facing side slopes of foothills

**Parent material:** Residuum derived from volcanic and metavolcanic rock

**Slope:** 15 to 30 percent

**Elevation:** 5,500 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

Typical Profile

Rock fragments on surface: 25 percent cobbles, 20 percent pebbles
Depth: 0 to 8 inches
Texture: Very cobbly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 8 to 19 inches
Texture: Very cobbly clay
Structure: Prismatic
Consistency: Very hard, firm
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 19 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Haplic Durargids, clayey-skeletal, mixed, mesic
Positions on landscape: Concave side slopes of foothills
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Positions on landscape: Rimrock along shoulder slopes of foothills
Distinctive present vegetation: None

Inclusion 3
Classification: Haploxericolic Durargids, fine, montmorillonitic, mesic
Positions on landscape: Crests and shoulder slopes of foothills
Distinctive present vegetation: Wyoming big sagebrush, needleandthread, bluegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Newpass Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Jung Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Newpass Soil
Range seeding: Poor—rooting depth, small stones, excess sodium
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, excess sodium
Daily cover for landfill: Poor—depth to rock, hard to pack, large stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—shrink-swell, low strength, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Jung Soil
Range seeding: Poor—large stones, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Newpass and Jung soils—VIIa, nonirrigated
Range site: Newpass soil—027X008N; Jung soil—027X032N; Inclusion 1—024X025N; Inclusion 2—none; Inclusion 3—027X068N
321—Newpass-Old Camp association

**Positions on landscape:** Foothills

**Composition**

**Major components:**
Newpass very gravelly fine sandy loam, 8 to 15 percent slopes, very stony—45 percent
Old Camp gravelly loam, 8 to 15 percent slopes—25 percent
Old Camp very gravelly loam, 15 to 30 percent slopes—20 percent
**Contrasting inclusions:**
Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—6 percent
Xerollic Haplorgids, fine, montmorillonitic, mesic, 8 to 30 percent slopes—4 percent

**Characteristics of the Newpass Soil**

**Classification:** Haploxerolic Nadurargids, fine, montmorillonitic, mesic

**Positions on landscape:** North-facing side slopes of foothills

**Parent material:** Residuum derived from volcanic and metavolcanic rock

**Slope:** 8 to 15 percent

**Elevation:** 6,000 to 7,200 feet

**Average annual precipitation:** About 9 inches

**Average annual air temperature:** About 48 degrees F

**Frost-free season:** About 110 days

**Dominant present vegetation:** Bluegrass, Thurber needlegrass, Wyoming big sagebrush

**Typical Profile**

**Rock fragments on surface:** 2 percent stones and boulders, 10 percent cobbles, 75 percent pebbles

**Depth:** 0 to 4 inches

**Texture:** Very gravelly fine sandy loam

**Structure:** Platy

**Consistence:** Slightly hard, very friable

**Reaction:** Mildly alkaline

**Salinity:** 0 to 4 millimhos per centimeter

**Sodicity (SAR):** 0 to 5

**Depth:** 4 to 14 inches

**Texture:** Clay

**Structure:** Prismatic

**Consistence:** Hard, firm

**Reaction:** Moderately alkaline

**Salinity:** 4 to 8 millimhos per centimeter

**Sodicity (SAR):** 13 to 25

**Depth:** 14 to 24 inches

**Texture:** Very cobbly silty clay, very gravelly clay, gravelly clay

**Structure:** Subangular blocky

**Consistence:** Hard, firm

**Reaction:** Strongly alkaline

**Salinity:** 2 to 4 millimhos per centimeter

**Sodicity (SAR):** 5 to 13

**Depth:** 24 to 26 inches

**Material:** Cemented hardpan

**Depth:** 26 inches

**Material:** Unweathered bedrock

**Soil and Water Features**

**Depth to the hardpan:** 20 to 29 inches

**Depth to bedrock:** 21 to 36 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Slow

**Available water capacity:** 2.6 to 3.2 inches

**Water-supplying capacity:** 9 inches

**Runoff:** Medium

**Hydrologic group:** C

**Erosion factors (upper layer):** K value—0.15; T value—2; wind erodibility group—5

**Hazard of erosion:** By water—slight; by wind—slight

**Shrink-swell potential:** High

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Low

**Characteristics of the Old Camp Soil, Strongly Sloping**

**Classification:** Lithic Xerollic Haplorgids, loamy-skeletal, mixed, mesic

**Positions on landscape:** Summits and shoulder slopes of foothills

**Parent material:** Residuum that is derived from basalt and andesite and includes some volcanic ash

**Slope:** 8 to 15 percent

**Elevation:** 6,000 to 7,200 feet

**Average annual precipitation:** About 9 inches

**Average annual air temperature:** About 48 degrees F

**Frost-free season:** About 110 days

**Dominant present vegetation:** Bluegrass, Thurber needlegrass, Wyoming big sagebrush

**Typical Profile**

**Rock fragments on surface:** 50 percent pebbles

**Depth:** 0 to 2 inches

**Texture:** Gravelly loam

**Structure:** Platy

**Consistence:** Slightly hard, very friable

**Reaction:** Mildly alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Sodicity (SAR):** 0 to 2

**Depth:** 2 to 11 inches
Texture: Very gravelly loam, very cobbly clay loam
Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 11 inches
Material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Old Camp Soil, Moderately Steep**

Classification: Lithic Xerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: South-facing side slopes of foothills
Parent material: Residuum that is derived from basalt and andesite and includes some volcanic ash
Slope: 15 to 30 percent
Elevation: 6,000 to 7,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Bluegrass, Thurber needlegrass, Wyoming big sagebrush

**Typical Profile**

**Rock fragments on surface:** 50 percent pebbles
**Depth:** 0 to 2 inches
**Texture:** Very gravelly loam
**Structure:** Platy
**Consistence:** Slightly hard, very friable
**Reaction:** Mildly alkaline
**Salinity:** 0 to 2 millimhos per centimeter
**Sodicity (SAR):** 0 to 2
**Depth:** 2 to 11 inches
**Texture:** Very gravelly loam, very cobbly clay loam
**Structure:** Angular blocky

Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 11 inches
Material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Contrasting Inclusions**

**Inclusion 1**
Classification: Xerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Channel banks, narrow inset fans
Distinctive present vegetation: Basin big sagebrush, basin wildrye, bluegrass

**Inclusion 2**
Classification: Xerolic Haplargids, fine, montmorillonitic, mesic
Positions on landscape: Concave shoulder slopes of foothills
Distinctive present vegetation: Singleleaf pinyon, Utah juniper, Wyoming big sagebrush, pine bluegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Newpass Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Old Camp Soil, Strongly Sloping**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Old Camp Soil, Moderately Steep**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Suitability and Limitations for Selected Uses

Newpass Soil
Range seeding: Poor—rooting depth, small stones, excess sodium
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, excess sodium
Daily cover for landfill: Poor—depth to rock, hard to pack, large stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—excess sodium
Sand: Improbable source—excess fines
Gravel: Irprobable source—excess fines

Old Camp Soil, Strongly Sloping
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Old Camp Soil, Moderately Steep
Range seeding: Poor—small stones, droughty
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Newpass and Old Camp soils—VII, nonirrigated
Range site: Newpass soil—027X008N; Old Camp soils—027X007N; Inclusion 1—024X006N; Inclusion 2—025X062N

360—Eastwell-Blackhawk-Pineval association
Positions on landscape: Fan piedmonts

Composition
Major components:
Eastwell gravelly loam, 4 to 15 percent slopes—45 percent
Blackhawk very fine sandy loam, 2 to 8 percent slopes—25 percent
Pineval gravelly loam, 15 to 30 percent slopes—20 percent
Contrasting inclusions:
Durixerollic Haplargids, coarse-loamy, mixed, mesic, 4 to 8 percent slopes—6 percent
Xerollic Durorthids, loamy, mixed, mesic, shallow, 8 to 15 percent slopes—4 percent

Characteristics of the Eastwell Soil
Classification: Haploxerolic Durorthids, loamy-skeletal, mixed, mesic, shallow
Positions on landscape: The highest summits and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium that includes loess
Slope: 4 to 15 percent
Elevation: 5,500 to 6,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, bluegrass, black sagebrush

Typical Profile
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 5 to 15 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 15 to 17 inches
Material: Cemented hardpan
Structure: Massive
Consistence: Very hard, very firm
Depth: 17 to 60 inches
Texture: Very gravelly loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Soil and Water Features

Depth to the hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.5 to 3.5 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Blackhawk Soil

Classification: Entic Durorthids, loamy, mixed, mesic, shallow
Positions on landscape: The lower summits of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

Depth: 0 to 3 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 14 inches
Texture: Loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 14 to 30 inches
Material: Cemented hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 30 to 48 inches
Texture: Loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Very strongly alkaline

Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 48 to 60
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 8 to 15 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features

Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.2 to 2.7 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.43; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Pineval Soil

Classification: Durixerollic Hapludands, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 15 to 30 percent
Elevation: 5,500 to 6,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.2 to 4.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Haplargids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush, pine bluegrass

Inclusion 2
Classification: Xerollic Duorthids, loamy, mixed, mesic, shallow
Positions on landscape: Convex, south-facing shoulder slopes of fan piedmont remnants
Distinctive present vegetation: Singleleaf pinyon, Utah juniper, Wyoming big sagebrush, pine bluegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Eastwell Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Blackhawk Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Pineval Soil
Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Eastwell Soil
Range seeding: Poor—droughty
Roadfill: Fair—large stones
Topsoil: Poor—cemented pan, small stones, area reclaim
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan, slope, large stones
Pond reservoir areas: Severe—seepage, cemented pan, slope
Embankments, dikes, and levees: Moderate—piping, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Blackhawk Soil
Range seeding: Poor—too arid, droughty
Roadfill: Good
Topsoil: Poor—cemented pan, area reclaim
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Moderate—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

Pineval Soil
Range seeding: Fair—too arid
Roadfill: Fair—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups

Land capability classification: Eastwell soil—VIIa, nonirrigated; Blackhawk soil—IVe, irrigated, and VIIa, nonirrigated; Pineval soil—Vle, nonirrigated
Range site: Eastwell soil—027X032N; Blackhawk soil—024X002N; Pineval soil—027X008N; Inclusions 1 and 2—027X008N
404—Glean-Gando association

**Positions on landscape:** Mountains

**Composition**

**Major components:**
- Glean very gravelly loam, 50 to 75 percent slopes—50 percent
- Gando very cobbly loam, 50 to 75 percent slopes—35 percent

**Contrasting inclusions:**
- Rock outcrop and rubble land—8 percent
- Welch loam, drained, 8 to 15 percent slopes—3 percent
- Welch loam, 8 to 15 percent slopes—2 percent
- Lithic Cryoborolls, 15 to 50 percent slopes—2 percent

**Characteristics of the Glean Soil**

**Classification:** Pachic Haploxerolls, loamy-skeletal, mixed, frigid

**Positions on landscape:** Concave, north-facing side slopes of mountains

**Parent material:** Colluvium derived from various kinds of rock

**Slope:** 50 to 75 percent

**Elevation:** 7,000 to 8,000 feet

**Average annual precipitation:** About 14 inches

**Average annual air temperature:** About 45 degrees F

**Frost-free season:** About 80 days

**Dominant present vegetation:** Bluebunch wheatgrass, Idaho fescue, mountain big sagebrush, serviceberry

**Typical Profile**

**Rock fragments on surface:** 20 percent cobbles, 20 percent pebbles

**Depth:** 0 to 6 inches

**Texture:** Very gravelly loam

**Structure:** Subangular blocky

**Consistency:** Slightly hard, very friable

**Reaction:** Neutral

**Depth:** 6 to 39 inches

**Texture:** Very gravelly sandy loam, very gravelly loam

**Structure:** Subangular blocky

**Consistency:** Slightly hard, very friable

**Reaction:** Neutral

**Depth:** 39 to 51 inches

**Texture:** Very gravelly sandy loam

**Structure:** Massive

**Consistency:** Soft, very friable

**Reaction:** Neutral

**Depth:** 51 inches

**Material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 40 to 60 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Moderately rapid

**Available water capacity:** 3 to 5 inches

**Water-supplying capacity:** 14 inches

**Runoff:** Rapid

**Hydrologic group:** B

**Erosion factors (upper layer):** K value—0.10; T value—3; wind erodibility group—8

**Hazard of erosion:** By water—slight; by wind—slight

**Shrink-swell potential:** Low

**Corrosivity:** To steel—moderate; to concrete—low

**Potential for frost action:** Moderate

**Characteristics of the Gando Soil**

**Classification:** Lithic Haploxerolls, loamy-skeletal, mixed, frigid

**Positions on landscape:** Crests and ridges of mountains

**Parent material:** Residuum derived from sedimentary rock

**Slope:** 50 to 75 percent

**Elevation:** 6,500 to 8,000 feet

**Average annual precipitation:** About 16 inches

**Average annual air temperature:** About 42 degrees F

**Frost-free season:** About 80 days

**Dominant present vegetation:** Bluegrass, Idaho fescue, low sagebrush, black sagebrush

**Typical Profile**

**Rock fragments on surface:** 10 percent cobbles, 20 percent pebbles

**Depth:** 0 to 4 inches

**Texture:** Very cobbly loam

**Structure:** Granular

**Consistency:** Soft, very friable

**Reaction:** Mildly alkaline

**Depth:** 4 to 10 inches

**Texture:** Very gravelly loam, extremely gravelly loam

**Structure:** Granular

**Consistency:** Soft, very friable

**Reaction:** Mildly alkaline

**Depth:** 10 inches

**Material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 10 to 20 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Moderate

**Available water capacity:** 1.1 to 1.5 inches

**Water-supplying capacity:** 10 inches

**Runoff:** Rapid

**Hydrologic group:** D
Erosion factors (upper layer): K value—0.20; T value—1; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Positions on landscape: Scattered peaks and scree on side slopes
Distinctive present vegetation: None

Inclusion 2
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Entrenched narrow drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 3
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Narrow drainageways, canyon bottoms
Distinctive present vegetation: Willow, sedge, tufted hairgrass

Inclusion 4
Classification: Lithic Cryoborolls
Positions on landscape: Convex, windswept, north-facing crests on mountains
Distinctive present vegetation: Low sagebrush, Idaho fescue

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Glean Soil
Wild herbaceous plants (nonirrigated): Good
Shrubs (nonirrigated): Good

Gando Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Glean Soil
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Gando Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Glean and Gando soils—VII, nonirrigated
Range site: Glean soil—024X023N; Gando soil—028B034N; Inclusion 1—none; Inclusion 2—028B024N; Inclusion 3—025X005N; Inclusion 4—028B038N

441—Gund-Umberland association
Positions on landscape: Bolson floors

Composition
Major components:
Gund silt loam, 0 to 2 percent slopes—50 percent
Umberland silt loam, 0 to 2 percent slopes—35 percent
Contrasting inclusions:
Aquic Durothric Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—8 percent
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—4 percent
Playas—3 percent

Characteristics of the Gund Soil
Classification: Aquic Durothric Torriorthents, fine-silty over clayey, mixed, nonacid, mesic
Positions on landscape: The upper lake plain remnants
Parent material: Silty alluvium derived from loess and volcanic ash over lake sediment
Slope: 0 to 2 percent
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Basin wildrye, basin big sagebrush, black greasewood, rubber rabbitbrush

Typical Profile
Depth: 0 to 4 inches
Texture: Silt loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 10 to 25
Depth: 4 to 23 inches
Texture: Silt loam
Structure: Platy
Consistence: Hard, firm
Reaction: Moderately alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 23 to 60 inches
Texture: Silty clay, clay
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 15 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: 36 to 42 inches
Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 9 to 11 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.43; T value—5;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Umerland Soil
Classification: Aerio Halaquepts, fine, montmorillonitic (calcareous), mesic
Positions on landscape: The lower lake plain remnants
Parent material: Silty lacustrine sediment derived from various kinds of rock
Slope: 0 to 2 percent
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Black greasewood, rubber rabbitbrush, Indian ricegrass, shadscale, bud sagebrush

Typical Profile
Depth: 0 to 7 inches
Texture: Silt loam

Structure: Granular
Consistence: Slightly hard, friable
Reaction: Very strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 30 to 50
Depth: 7 to 60 inches
Texture: Clay, silty clay, silty clay loam
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Very strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 20 to 46

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 9 to 11 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.43; T value—5;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions
Inclusion 1
Classification: Aquic Durorthid Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: The highest lake plain remnants
Distinctive present vegetation: Black greasewood, Indian ricegrass

Inclusion 2
Classification: Aerio Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Lake plain margins
Distinctive present vegetation: Black greasewood, basin wildrye, rubber rabbitbrush

Inclusion 3
Positions on landscape: Dry lake extensions; isolated, irregularly shaped sink areas
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Gund Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Very poor
Shallow water areas: Fair

**Banner Soil**
Wild herbaceous plants (nonirrigated): Very poor
 Shrubs (nonirrigated): Very poor

**Suitability and Limitations for Selected Uses**

**Gund Soil**
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength, shrink-swell
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, hard to pack, excess salt
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Banner Soil**
Range seeding: Poor—excess salt, excess sodium, too crusty
Roadfill: Poor—low strength, shrink-swell
Topsoil: Poor—excess salt, excess sodium, too clayey
Daily cover for landfill: Poor—too clayey, hard to pack, excess sodium
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**
Land capability classification: Gund soil—VIw, nonirrigated; Banner soil—VIIa, nonirrigated
Range site: Gund soil—024X006N; Banner soil—024X003N; Inclusion 1—024X008N; Inclusion 2—024X007N; Inclusion 3—none

**442—Gund-Babus-Wendane association**

**Positions on landscape:** Bolson floors

**Composition**

Major components:
Gund silt loam, strongly saline-alkali, drained, 0 to 2 percent slopes—35 percent
Babus very fine sandy loam, 0 to 2 percent slopes—30 percent
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—20 percent

Contrasting inclusions:
Aquic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—7 percent
Durothric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—4 percent
Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—4 percent

**Characteristics of the Gund Soil**

Classification: Aquic Durothric Torriorthents, fine-silty over clayey, mixed, nonacid, mesic
Positions on landscape: Lake plain terraces
Parent material: Silty alluvium derived from loess and volcanic ash over lake sediment
Slope: 0 to 2 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Basin wildrye, black greasewood, rubber rabbitbrush

**Typical Profile**

Depth: 0 to 4 inches
Texture: Silt loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 75 to 99 millimhos per centimeter
Sodicity (SAR): 10 to 25

Depth: 4 to 23 inches
Texture: Silt loam
Structure: Platy
Consistence: Hard, firm
Reaction: Moderately alkaline
Salinity: 15 to 30 millimhos per centimeter
Sodicity (SAR): 50 to 80

Depth: 23 to 60 inches
Texture: Silty clay, clay
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 46 to 60

**Soil and Water Features**

Depth to a seasonal high water table: 60 to 72 inches
Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 8.6 to 11.0 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.49; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Bubus Soil
Classification: Durorthidic Torriorthents, coarse-loamy,
mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants
Parent material: Mixed alluvium that is high in content of
pyroclastic material
Slope: 0 to 2 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, black
greasewood, bottlebrush, squirreltail

Typical Profile
Depth: 0 to 6 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 13

Depth: 6 to 60 inches
Texture: Stratified sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60
inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9 to 10 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Wendane Soil
Classification: Aerlic Halaquepts, fine-silty, mixed
(calcareous), mesic
Positions on landscape: Alluvial flats
Parent material: Silty alluvium derived from volcanic
rock, tuff, loess, and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, basin
wildrye

Typical Profile
Depth: 0 to 7 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 30 to 50 millimhos per centimeter
Sodicity (SAR): 13 to 25

Depth: 7 to 18 inches
Texture: Silt loam, very fine sandy loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Depth: 18 to 60 inches
Texture: Stratified silt loam to clay loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 40

Soil and Water Features
Depth to a seasonal high water table: 30 to 48 inches
Frequency of flooding: Frequent for brief to long periods
in February through June
Permeability: Moderately slow
Available water capacity: 11 to 13 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High
Contrasting Inclusions

Inclusion 1
Classification: Aquic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Adjacent inset fans
Distinctive present vegetation: Basin big sagebrush, black greasewood

Inclusion 2
Classification: Durothric Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Shorelines, offshore bars
Distinctive present vegetation: Black greasewood, shadscale

Inclusion 3
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: The lower lake plains
Distinctive present vegetation: Black greasewood

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Gund Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Very poor
Shallow water areas: Fair

Bubus Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Wendane Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Gund Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength, shrink-swell
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, hard to pack, excess salt
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Bubus Soil
Range seeding: Poor—too arid, excess salt, excess sodium

Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Wendane Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Gund and Wendane soils—VIIw, nonirrigated; Bubus soil—VIIw, nonirrigated
Range site: Gund soil—024X008N; Bubus soil—024X003N; Wendane soil—024X007N; Inclusion 1—024X006N; Inclusion 2—024X008N; Inclusion 3—024X011N

443—Gund-Batan association
Positions on landscape: Bolson floors

Composition
Major components:
Gund silt loam, strongly saline-alkali, drained, 0 to 2 percent slopes—65 percent
Batan silt loam, 0 to 2 percent slopes—25 percent
Contrasting inclusions:
Aeric Halaquepts, fine, montmorillonitic, mesic, 0 to 2 percent slopes—5 percent
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—3 percent
Ocala Variant silt loam, 0 to 2 percent slopes—2 percent

Characteristics of the Gund Soil
Classification: Aquic Durothric Torriorthents, fine-silty over clayey, mixed, nonacid, mesic
Positions on landscape: Lake plain terraces
Parent material: Silty alluvium derived from loess and volcanic ash over lake sediment
Slope: 0 to 2 percent
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Basin wildrye, black greasewood, rubber rabbitbrush

Typical Profile
Depth: 0 to 4 inches
Texture: Silt loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 75 to 100 millimhos per centimeter
Sodicity (SAR): 10 to 25
Depth: 4 to 23 inches
Texture: Silt loam
Structure: Platy
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 50 to 80
Depth: 23 to 60 inches
Texture: Silty clay, clay
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: 60 to 72 inches
Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 8.6 to 11.0 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.49; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Batan Soil
Classification: Durorthic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants
Parent material: Silty alluvium that is high in content of loess and pyroclastic material
Slope: 0 to 2 percent

Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Typical Profile
Depth: 0 to 5 inches
Texture: Silt loam
Structure: Platy
Consistency: Hard, very friable
Reaction: Strongly alkaline
Salinity: 20 to 40 millimhos per centimeter
Sodicity (SAR): 46 to 60
Depth: 5 to 68 inches
Texture: Stratified silt loam to silty clay loam
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5;
winds erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Aeric Halaquepts, fine, montmorillonitic, mesic
Positions on landscape: Ponded lake plains
Distinctive present vegetation: Black greasewood

Inclusion 2
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Channeled lake plains
Distinctive present vegetation: Black greasewood, basin wildrye, rubber rabbitbrush

Inclusion 3
Classification: Aeric Halaquepts, fine, montmorillonitic, mesic
Positions on landscape: Lake plains that have a static water table
Distinctive present vegetation: Alkali rabbitbrush, alkaligrass

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Gund Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Very poor
Shallow water areas: Fair

**Batan Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Suitability and Limitations for Selected Uses**

**Gund Soil**
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength, shrink-swell
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, hard to pack, excess salt
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Batan Soil**
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Restrictive Features for Selected Practices**

**Batan Soil**
Drainage: Deep to water
Irrigation: Excess salt, excess sodium
Terraces and diversions: Erodes easily

**Interpretive Groups**
Land capability classification: Gund soil—VI lw,
nonirrigated; Batan soil—VIIs, nonirrigated

**Range site:** Gund soil—024X008N; Batan soil—024X003N; Inclusion 1—024X011N; Inclusion 2—024X007N; Inclusion 3—024X044N

**444—Gund association**
Positions on landscape: Lake plains

**Composition**

Major components:
Gund silt loam, 0 to 2 percent slopes—60 percent
Gund silt loam, drained, 0 to 2 percent slopes—25 percent

Contrasting inclusions:
Durothric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent
Orovada fine sandy loam, 0 to 2 percent slopes—5 percent
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—5 percent

**Characteristics of the Gund Soil**

Classification: Aquic Durothric Torriorthents, fine-silty over clayey, mixed, nonacid, mesic
Positions on landscape: The lower lake plains
Parent material: Silty alluvium derived from loess and volcanic ash over lake sediment
Slope: 0 to 2 percent
Elevation: 5,700 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Basin wildrye, black greasewood, basin big sagebrush, western wheatgrass

**Typical Profile**

Depth: 0 to 4 inches
Texture: Silt loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 10 to 25

Depth: 4 to 23 inches
Texture: Silt loam
Structure: Platy
Consistence: Hard, firm
Reaction: Moderately alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 46

Depth: 23 to 60 inches
Texture: Silty clay, clay
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: 36 to 42 inches
Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 8.6 to 11.0 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.49; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Gund Soil, Drained
Classification: Aquic Durorthic Torriorthents, fine-silty
over clayey, mixed, nonacid, mesic
Positions on landscape: The higher lake plains
Parent material: Silty alluvium derived from loess and
volcanic ash over lake sediment
Slope: 0 to 2 percent
Elevation: 5,700 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Black greasewood, basin
wildrye, seepweed

Typical Profile
Depth: 0 to 4 inches
Texture: Silt loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 75 to 100 millimhos per centimeter
Sodicity (SAR): 10 to 25

Depth: 4 to 23 inches
Texture: Silt loam
Structure: Platy
Consistence: Hard, firm
Reaction: Moderately alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 50 to 80

Depth: 23 to 60 inches
Texture: Silty clay, clay
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: 60 to 72 inches
Frequency of flooding: Rare
Permeability: Very slow
Available water capacity: 8.6 to 11.0 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.49; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Classification: Durorthic Torriorthents, coarse-loamy,
mixed (calcareous), mesic
Positions on landscape: Dissected lake plains
Distinctive present vegetation: Wyoming big sagebrush,
black greasewood

Inclusion 2
Classification: Durixerollic Camborthids, coarse-loamy,
mixed, mesic
Positions on landscape: Adjacent fan skirts
Distinctive present vegetation: Wyoming big sagebrush,
Indian ricegrass, bluegrass

Inclusion 3
Classification: Aeric Halakcepts, fine-silty, mixed
(calcereous), mesic
Positions on landscape: Channeled, lower lake plains
Distinctive present vegetation: Black greasewood, rubber
rabbitbrush, basin wildrye

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Gund Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Very poor
Shallow water areas: Fair

Gund Soil, Drained
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Very poor
Shallow water areas: Fair
Suitability and Limitations for Selected Uses

Gund Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength, shrink-swell
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, hard to pack, excess salt
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Gund Soil, Drained
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength, shrink-swell
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, hard to pack, excess salt
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Gund soils—VIIw, nonirrigated
Range site: Gund soil—024X006N; Gund soil, drained—024X008N; Inclusion 1—024X022N; Inclusion 2—028B010N; Inclusion 3—024X007N

461—Hapgood-Packer-Layview association
Positions on landscape: Mountains

Composition

Major components:
Hapgood very gravelly loam, 30 to 50 percent slopes—40 percent
Packer extremely gravelly loam, 15 to 50 percent slopes—25 percent
Layview very gravelly sandy loam, 8 to 15 percent slopes—15 percent
Contrasting inclusions:
Entic Cryembrepts, loamy-skeletal, mixed, 30 to 50 percent slopes—8 percent
Rock outcrop and Rubble land—7 percent

Argic Cryoborolls, loamy-skeletal, mixed, 15 to 30 percent slopes—4 percent
Hackwood bouldery loam, 30 to 50 percent slopes—1 percent

Characteristics of the Hapgood Soil
Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Concave back slopes of mountains
Parent material: Colluvium that includes loess and volcanic ash
Slope: 30 to 50 percent
Elevation: 8,000 to 9,800 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

Typical Profile

Depth: 17 to 40 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 40 to 60 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Neutral

461—Hapgood-Packer-Layview association

Positions on landscape: Mountains

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 4.8 to 6.0 inches
Water-supplying capacity: 16 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate
Characteristics of the Packer Soil

Classification: Argic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Convex, windswept shoulder slopes and upper side slopes of mountains
Parent material: Mixed residuum that includes loess and volcanic ash
Slope: 15 to 50 percent
Elevation: 8,000 to 9,800 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

Typical Profile

Depth: 0 to 10 inches
Texture: Extremely gravelly loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Neutral

Depth: 10 to 21 inches
Texture: Extremely cobbly clay loam, extremely cobbly loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 21 to 60 inches
Texture: Extremely cobbly sandy loam, extremely cobbly loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.6 to 5.4 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Layview Soil

Classification: Argic Lithic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Convex, windswept crests of mountains

Parent material: Residuum derived from andesite, rhyolite, and tuff
Slope: 8 to 15 percent
Elevation: 8,500 to 9,800 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

Typical Profile

Rock fragments on surface: 25 percent cobbles, 50 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 3 to 12 inches
Texture: Very gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 12 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 to 1.2 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Entic Cryumblepts, loamy-skeletal, mixed
Positions on landscape: Concave snow pockets below the ridgeline
Distinctive present vegetation: Lupine, Letterman needlegrass

Inclusion 2
Positions on landscape: Scattered peaks, rimrock, stripes below areas of Rock outcrop
Distinctive present vegetation: None
Inclusion 3
Classification: Argic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Concave back slopes of mountains
Distinctive present vegetation: Low sagebrush, Idaho fescue

Inclusion 4
Classification: Pachic Cryoborolls, fine-loamy, mixed
Positions on landscape: Concave snow pockets
Distinctive present vegetation: Quaking aspen

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Hapgood Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Packer Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Layview Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Hapgood Soil
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Packer Soil
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Layview Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Hapgood, Packer, and Layview soils—Vlls, nonirrigated
Range site: Hapgood soil—024X032N; Packer and Layview soils—024X016N; Inclusion 1—025X028N;
Inclusion 2—none; Inclusion 3—024X027N;
Inclusion 4—025X065N

463—Hapgood-Packer-Rubble land association
Positions on landscape: Mountains

Composition

Major components:
Hapgood gravelly loam, 50 to 75 percent slopes—45 percent
Packer extremely cobbly sandy loam, 30 to 50 percent slopes—20 percent
Rubble land—20 percent
Contrasting inclusions:
Layview very cobbly loam, 8 to 30 percent slopes—6 percent
Waiti very cobbly loam, 15 to 30 percent slopes—5 percent
Pachic Cryoborolls, loamy-skeletal, mixed, 15 to 30 percent slopes—4 percent

Characteristics of the Hapgood Soil
Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Concave, north-facing side slopes of mountains in areas where snow accumulates
Parent material: Colluvium that includes loess and volcanic ash
Slope: 50 to 75 percent
Elevation: 8,200 to 9,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry
Typical Profile
Rock fragments on surface: 10 percent pebbles

Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 17 to 40 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 40 to 60 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Neutral

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.4 inches
Water-supplying capacity: 16 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Packer Soil
Classification: Argic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: East-, west-, and south-facing side slopes of mountains
Parent material: Mixed residuum that includes loess and volcanic ash
Slope: 30 to 50 percent
Elevation: 7,800 to 9,000 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

Typical Profile
Depth: 0 to 10 inches
Texture: Extremely cobbly sandy loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Neutral

Depth: 10 to 21 inches
Texture: Extremely cobbly clay loam, extremely cobbly loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Depth: 21 to 60 inches
Texture: Extremely cobbly sandy loam, extremely cobbly loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Neutral

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.6 to 5.4 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.15; T value—5; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rubble Land
Positions on landscape: Side slopes below sharp shoulder scarps of mountains
Slope: 50 to 75 percent

Contrasting Inclusions

Inclusion 1
Classification: Argic Lithic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Crests, shoulder slopes, and convex, upper side slopes of mountains
Distinctive present vegetation: Black sagebrush, low sagebrush, Idaho fescue

Inclusion 2
Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Convex, lower side slopes of mountains
Distinctive present vegetation: Low sagebrush, Idaho fescue

Inclusion 3
Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Foot slopes below areas on side slopes of mountains where snow accumulates and areas of Rubble land
Distinctive present vegetation: Oceanspray, mountain brome

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Hapgood Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Packer Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Hapgood Soil
Range seeding: Poor—erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfil: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Packer Soil
Range seeding: Poor—large stones
Roadfill: Poor—slope, large stones
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfil: Poor—small stones, slope
Shallow excavations: Severe—slope, large stones
Local roads and streets: Severe—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embarkments, dikes, and levees: Severe—seepage, large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Interpretive Groups

Land capability classification: Hapgood soil—VII, nonirrigated; Packer soil—VII, nonirrigated; Rubble land—VIIIs, nonirrigated

Range site: Hapgood soil—024X032N; Packer soil—024X016N; Rubble land—none; Inclusion 1—024X016N; Inclusion 2—024X027N; Inclusion 3—024X034N

465—Hapgood-Halacan-Hatur association

Positions on landscape: Mountains

Composition

Major components:
Hapgood gravelly loam, 30 to 50 percent slopes—55 percent
Halacan very gravelly loam, 8 to 15 percent slopes—20 percent
Hatur very gravelly loam, 30 to 50 percent slopes—15 percent

Contrasting inclusions:
Cryic Lithic Rendolls, loamy-skeletal, carbonatic, 8 to 30 percent slopes—4 percent
Rock outcrop—3 percent
Cumulic Cryoborolls, fine-loamy, mixed, drained, 2 to 4 percent slopes—2 percent
Rubble land—1 percent

Characteristics of the Hapgood Soil

Classification: Pachic Cryoborolls, loamy-skeletal, mixed

Positions on landscape: Concave side slopes of mountains in areas where snow accumulates

Parent material: Colluvium that includes loess and volcanic ash

Slope: 30 to 50 percent
Elevation: 8,800 to 9,500 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days

Dominant present vegetation: Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 17 to 40 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 40 to 60 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.4 inches
Water-supplying capacity: 16 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5;
wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Halacan Soil
Classification: Cryic Lithic Rendolls, loamy-skeletal, carbonatic
Positions on landscape: Crests and shoulder slopes of mountains
Parent material: Residuum and colluvium derived from limestone
Slope: 8 to 15 percent
Elevation: 8,200 to 9,500 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 36 degrees F
Frost-free season: About 40 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

Typical Profile
Rock fragments on surface: 50 percent pebbles
Depth: 0 to 14 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Moderately alkaline
Depth: 5 to 17 inches
Texture: Extremely channery loam, very channery loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Depth: 17 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.0 to 3.6 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—2;
wind erodibility group—9
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Classification: Cryic Lithic Rendolls, loamy-skeletal, carbonatic
Positions on landscape: Windswept crests of mountains
Distinctive present vegetation: Black sagebrush, Idaho fescue

Inclusion 2
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 3
Classification: Cumulic Cryoborolls, fine-loamy, mixed
Positions on landscape: Mountain drainageways, canyon bottoms
Distinctive present vegetation: Basin wildrye, basin big sagebrush, rose, willow

Inclusion 4
Positions on landscape: Side slopes of mountains below areas of Rock outcrop
Distinctive present vegetation: None

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Hapgood Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Halacan Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Hatur Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Hapgood Soil**
Range seeding: Poor—eroses easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Embarkments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Halacan Soil**
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock

**Hatur Soil**
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikes, and levees: Severe—seepage, large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

**Interpretive Groups**
Land capability classification: Hapgood soil—VIIe, nonirrigated; Halacan and Hatur soils—VIIIs, nonirrigated
Range site: Hapgood soil—024X032N; Halacan soil—024X016N; Hatur soil—026B029N; Inclusion 1—024X042N; Inclusion 2—none; Inclusion 3—025X003N; Inclusion 4—none

**491—Enko-Orovada association, gently sloping**
Positions on landscape: Piedmont slopes

**Composition**
Major components:
Enko sandy loam, 2 to 4 percent slopes—55 percent
Orovada fine sandy loam, 2 to 4 percent slopes—30 percent
Contrasting inclusions:
Pineval gravelly loam, 2 to 4 percent slopes—6 percent
Zineb gravelly loam, 2 to 4 percent slopes—5 percent
Duric Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—4 percent

**Characteristics of the Enko Soil**
Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 4 percent
Elevation: 6,000 to 6,400 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile
Depth: 0 to 6 inches
Texture: Sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 12 inches
Texture: Loam, sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 12 to 18 inches
Texture: Sandy loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 18 to 60 inches
Texture: Sandy loam, fine sandy loam
Structure: Massive
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.1 to 8.2 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Orovida Soil
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans, margins of fan skirts

Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 6,000 to 6,400 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 20 to 60 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.5 to 10.0 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Durixerolitic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Inset fans near stream channels
Distinctive present vegetation: Annuals

Major Uses
Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Irrigated cropland

Suitability for Wildlife Habitat Elements
Enko Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Enko Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Enko soil—Ile, irrigated, and Vls. nonirrigated; Orovada soil—Ile, irrigated, and Vlc. nonirrigated
Range site: Enko and Orovada soils—028B010N; Inclusions 1 and 2—028B010N

492—Enko-Glyphs association
Positions on landscape: Fan piedmants

Composition
Major components:
Enko sandy loam, gravelly substratum, 0 to 2 percent slopes—60 percent
Glyphs fine sandy loam, 0 to 2 percent slopes—25 percent
Contrasting inclusions:
Orovada very fine sandy loam, 0 to 2 percent slopes—9 percent
Orovada gravelly fine sandy loam, gravelly substratum, 0 to 2 percent slopes—6 percent

Characteristics of the Enko Soil
Classification: Durixerolitic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan aprons
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 0 to 2 percent
Elevation: 6,300 to 6,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile
Depth: 0 to 14 inches
Texture: Sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 14 to 53 inches
Texture: Loam, sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 53 to 63 inches
Texture: Very gravelly loamy sand, extremely gravelly sand
Structure: Single grain
Consistence: Loose
Reaction: Mildly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5
Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.5 to 8.5 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.32; T value—4; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Glyphs Soil

Classification: Durixerolic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Parent material: Mixed alluvium that is derived from volcanic rock and includes loess and volcanic ash
Slope: 0 to 2 percent
Elevation: 6,200 to 6,400 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

Typical Profile

Depth: 0 to 7 inches
Texture: Fine sandy loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 7 to 17 inches
Texture: Gravelly clay loam, gravelly sandy clay loam
Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 17 to 37 inches
Texture: Gravelly sandy loam
Structure: Massive
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Depth: 37 to 60 inches
Texture: Very gravelly coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow over very rapid
Available water capacity: 4.5 to 7.0 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Adjacent fan skirts
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Irrigated cropland

Suitability for Wildlife Habitat Elements

Enko Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Glyphs Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Enko Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, area reclaim
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Probable source
Gravel: Probable source

Glyphs Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Restrictive Features for Selected Practices

Enko Soil
Drainage: Deep to water
Irrigation: Percs slowly, soil blowing
Terraces and diversions: Soil blowing

Glyphs Soil
Drainage: Deep to water
Irrigation: Rooting depth, excess salt
Terraces and diversions: Too sandy

Interpretive Groups
Land capability classification: Enko soil—IIls, irrigated, and VIs, nonirrigated; Glyphs soil—IIls, irrigated, and Vlc, nonirrigated
Range site: Enko and Glyphs soils—028B010N;
Inclusions 1 and 2—028B010N

493—Enko-Orovada association, nearly level

Positions on landscape: Piedmont slopes

Composition

Major components:
Enko sandy loam, 0 to 2 percent slopes—45 percent
Orovada fine sandy loam, 0 to 2 percent slopes—40 percent
Contrasting inclusions:
Glyphs gravelly fine sandy loam, 0 to 4 percent slopes—5 percent
Orovada fine sandy loam, gullied, 0 to 4 percent slopes—5 percent
Arctic Haploxerolls, fine-loamy, mixed, mesic, 0 to 2 percent slopes—5 percent

Characteristics of the Enko Soil
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 0 to 2 percent
Elevation: 6,600 to 6,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile
Depth: 0 to 6 inches
Texture: Sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 6 to 12 inches
Texture: Loam, sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 12 to 18 inches
Texture: Sandy loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 18 to 60 inches
Texture: Sandy loam, fine sandy loam
Structure: Massive
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6 to 9 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Orovada Soil
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 0 to 2 percent
Elevation: 6,600 to 6,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 8 to 10 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B

Contrasting Inclusions
Inclusion 1
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, needlegrass

Inclusion 2
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Big sagebrush, rabbitbrush

Inclusion 3
Classification: Aridic Haploxerolls, fine-loamy, mixed, mesic
Positions on landscape: Areas adjacent to active channels
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses
Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Irrigated cropland

Suitability for Wildlife Habitat Elements
Enko Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Enko Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Sèvére—piping
Sand: Improbable—excess fines
Gravel: Improbable—excess fines
Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action, flooding
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Enko Soil
Drainage: Deep to water
Irrigation: Soil blowing, percis slowly
Terraces and diversions: Erodes easily, soil blowing

Orovada Soil
Drainage: Deep to water
Irrigation: Soil blowing, erodes easily
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups
Land capability classification: Enko soil—IIs, irrigated, and Vls, nonirrigated; Orovada soil—Ilc, irrigated, and Vlc, nonirrigated
Range site: Enko and Orovada soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B009N; Inclusion 3—028B003N

512—Hessing-Relley association
Positions on landscape: Fan skirts, basin floors

Composition
Major components:
Hessing gravelly silt loam, 0 to 2 percent slopes—55 percent
Relley silt loam, frequently flooded, 0 to 2 percent slopes—30 percent
Contrasting inclusions:
Typic Camborthids, sandy-skeletal, mixed, mesic, 0 to 2 percent slopes—5 percent
Creemon very fine sandy loam, 0 to 2 percent slopes—5 percent
Durorthic Torriorthents, coarse-loamy, mixed, mesic, occasionally flooded, 0 to 2 percent slopes—5 percent

Characteristics of the Hessing Soil
Classification: Typic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts at the higher elevations

Parent material: Loess and silty alluvium that include volcanic ash
Slope: 0 to 2 percent
Elevation: 5,200 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

Typical Profile
Depth: 0 to 4 inches
Texture: Gravelly silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 4 to 11 inches
Texture: Silty clay loam, silt loam
Structure: Subangular blocky
Consistence: Hard, friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 11 to 18 inches
Texture: Very fine sandy loam, silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 18 to 30 inches
Texture: Gravelly loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 40
Depth: 30 to 60 inches
Texture: Very gravelly sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.3 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—3;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Relley Soil
Classification: Duric Camborthids, fine-silty, mixed,
mesic
Positions on landscape: Broad inset fans, the lower fan
skirts
Parent material: Mixed alluvium that includes loess and
volcanic ash
Slope: 0 to 2 percent
Elevation: 5,100 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail,
Indian ricegrass, sickle saltbush

Typical Profile
Depth: 0 to 8 inches
Texture: Silt loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 8 to 16 inches
Texture: Silt loam
Structure: Prismatic
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 16 to 28 inches
Texture: Silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 28 to 60 inches
Texture: Silt loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: More than 60
inches
Frequency of flooding: Frequent for very brief periods in
December through June
Permeability: Moderate
Available water capacity: 11 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Typic Camborthids, sandy-skeletal,
mixed, mesic
Positions on landscape: Smooth stream terraces
adjacent to flood plains
Distinctive present vegetation: Shadscale, bud
sagebrush
Inclusion 2
Classification: Duric Camborthids, coarse-silty, mixed,
mesic
Positions on landscape: Flood plain remnants
Distinctive present vegetation: Shadscale, bud
sagebrush
Inclusion 3
Classification: Durorthid Torriorthents, coarse-loamy,
mixed, mesic
Positions on landscape: Flood plains
Distinctive present vegetation: Basin wildrye, basin big
sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Hessing Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Relley Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses
Hessing Soil
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—small stones, area reclaim  
Daily cover for landfill: Poor—seepage, small stones  
Shallow excavations: Severe—cutbanks cave  
Local roads and streets: Slight  
Pond reservoir areas: Severe—seepage  
Embankments, dikes, and levees: Severe—seepage, excess salt  
Sand: Probable source  
Gravel: Probable source  

Relley Soil  
Range seeding: Poor—too arid  
Roadfill: Fair—low strength, shrink-swell  
Topsoil: Fair—thin layer  
Daily cover for landfill: Good  
Shallow excavations: Moderate—flooding  
Local roads and streets: Severe—flooding  
Pond reservoir areas: Moderate—seepage  
Embankments, dikes, and levees: Severe—piping, excess salt  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines  

Restrictive Features for Selected Practices  

Hessing Soil  
Drainage: Deep to water  
Irrigation: Excess salt  
Terraces and diversions: Erodes easily, too sandy  

Relley Soil  
Drainage: Deep to water  
Irrigation: Erodes easily, flooding, excess salt  
Terraces and diversions: Erodes easily  

Interpretive Groups  
Land capability classification: Hessing soil—II, irrigated, and Vlls, nonirrigated; Relley soil—Illw, irrigated, and Vllw, nonirrigated  
Range site: Hessing soil—024X002N; Relley soil—024X012N; Inclusions 1 and 2—024X002N; Inclusion 3—024X006N  

560—Jesse Camp silt loam  
Positions on landscape: Stream terraces  
Composition  

Major component: Jesse Camp silt loam, 0 to 2 percent slopes—85 percent  
Contrasting inclusions: Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid, 0 to 4 percent slopes—8 percent  
Fenster silt loam, slightly alkalai, 0 to 4 percent slopes—4 percent  

Jesse Camp silt loam, occasionally flooded, 0 to 2 percent slopes—3 percent  

Characteristics of the Jesse Camp Soil  
Classification: Xerolic Camborthids, fine-silty, mixed, frigid  
Positions on landscape: Stream terraces  
Parent material: Silty alluvium that includes volcanic ash  
Slope: 0 to 2 percent  
Elevation: 6,000 to 6,500 feet  
Average annual precipitation: About 9 inches  
Average annual air temperature: About 44 degrees F  
Frost-free season: About 100 days  
Dominant present vegetation: Basin wildrye, basin big sagebrush, western wheatgrass  

Typical Profile  
Depth: 0 to 4 inches  
Texture: Silt loam  
Structure: Platy  
Consistency: Soft, very friable  
Reaction: Moderately alkaline  
Salinity: 0 to 2 millimhos per centimeter  
Sodicity (SAR): 0 to 2  
Depth: 4 to 12 inches  
Texture: Silt loam  
Structure: Platy  
Consistency: Slightly hard, very friable  
Reaction: Moderately alkaline  
Salinity: 0 to 2 millimhos per centimeter  
Sodicity (SAR): 0 to 2  
Depth: 12 to 60 inches  
Texture: Silt loam  
Structure: Platy  
Consistency: Hard, friable  
Reaction: Moderately alkaline  
Salinity: 2 to 4 millimhos per centimeter  
Sodicity (SAR): 0 to 5  

Soil and Water Features  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: Rare  
Permeability: Moderately slow  
Available water capacity: 11 to 12 inches  
Water-supplying capacity: 9 inches  
Runoff: Slow  
Hydrologic group: B  
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—6  
Hazard of erosion: By water—slight; by wind—slight  
Shrink-swell potential: Moderate  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Moderate
Contrasting Inclusions

Inclusion 1
Classification: Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid
Positions on landscape: The higher parts of stream terraces
Distinctive present vegetation: Indian ricegrass, Wyoming big sagebrush

Inclusion 2
Classification: Typic Torriorthents, fine-silty, mixed (calcareous), frigid
Positions on landscape: Outer margins of stream terraces
Distinctive present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Inclusion 3
Classification: Xerolic Camborthods, fine-silty, mixed, frigid
Positions on landscape: The lowest parts of stream terraces
Distinctive present vegetation: Basin big sagebrush, rabbitbrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Range seeding: Fair—too arid
Roadfill: Fair—low strength, shrink-swell
Topsoil: Good
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, frost action, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Jesse Camp soil—llc, irrigated, and Vlc, nonirrigated
Range site: Jesse Camp soil—028B003N; Inclusion 1—028B010N; Inclusion 2—028B017N; Inclusion 3—028B009N

621—Loncan-Gando-Glean association
Positions on landscape: Mountains

Composition
Major components:
Loncan gravelly loam, 15 to 50 percent slopes—40 percent
Gando very gravelly loam, 15 to 30 percent slopes—25 percent
Glean very gravelly loam, 15 to 30 percent slopes—25 percent
Contrasting inclusions:
Rock outcrop and Rubble land—4 percent
Welch loam, drained, 4 to 15 percent slopes—3 percent
Argic Pachic Cryoborolls, 15 to 30 percent slopes—2 percent
Welch loam, 4 to 15 percent slopes—1 percent

Characteristics of the Loncan Soil
Classification: Aridic Haploxerolls, loamy-skeletal, mixed, frigid
Positions on landscape: The intermediate and lower side slopes of mountains
Parent material: Residuum and colluvium derived from chert
Slope: 15 to 50 percent
Elevation: 6,500 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, mountain big sagebrush

Typical Profile
Rock fragments on surface: 5 percent cobbles, 30 percent pebbles
Depth: 0 to 9 inches
Texture: Gravelly loam
Structure: Granular
Consistence: Soft, very friable
Reaction: Neutral
Depth: 9 to 22 inches
Texture: Very gravelly loam
Structure: Granular
Consistence: Soft, very friable
Reaction: Neutral
Depth: 22 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 21 to 38 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.9 to 2.7 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.17; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Gando Soil

Classification: Lithic Haploxerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Crests and the upper side slopes of mountains
Parent material: Residuum derived from mixed sedimentary rock
Slope: 15 to 30 percent
Elevation: 7,000 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluegrass, Idaho fescue, low sagebrush, black sagebrush

Typical Profile

Rock fragments on surface: 10 percent cobbles, 20 percent pebbles
Depth: 0 to 4 inches
Texture: Very gravelly loam
Structure: Granular
Consistence: Soft, very friable
Reaction: Slightly hard, very friable

Depth: 4 to 10 inches
Texture: Very gravelly loam, extremely gravelly loam
Structure: Granular
Consistence: Soft, very friable
Reaction: Slightly hard, very friable

Depth: 10 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 0.6 to 1.0 inch
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Glean Soil

Classification: Pachic Haploxerolls, loamy-skeletal, mixed, frigid
Positions on landscape: North-facing, concave side slopes of mountains
Parent material: Colluvium derived from various kinds of rock
Slope: 15 to 30 percent
Elevation: 7,500 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, Idaho fescue, mountain big sagebrush, serviceberry

Typical Profile

Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 6 to 39 inches
Texture: Very gravelly sandy loam, very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 39 to 51 inches
Texture: Very gravelly sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Neutral

Depth: 51 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.1 to 5.1 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—3; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Positions on landscape: Crests and side slopes of mountains
Distinctive present vegetation: None

Inclusion 2
Classification: Cumulic Hapludolls, fine-loamy, mixed, frigid
Positions on landscape: Narrow, entrenched mountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 3
Classification: Argic Pachic Cryoborolls
Positions on landscape: The higher, concave, north-facing back slopes of mountains
Distinctive present vegetation: Common chokecherry, snowberry, Idaho fescue

Inclusion 4
Classification: Cumulic Hapludolls, fine-loamy, mixed, frigid
Positions on landscape: Narrow mountain drainageways and canyon bottoms
Distinctive present vegetation: Sedge, willow, tufted hairgrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Loncan Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Gando Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Glean Soil
Wild herbaceous plants (nonirrigated): Good
Shrubs (nonirrigated): Good

Suitability and Limitations for Selected Uses

Loncan Soil
Range seeding: Fair—erodes easily, too arid, drouthy
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Gando Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Glean Soil
Range seeding: Poor—small stones
Roadfill: Fair—depth to rock, thin layer, slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Loncan and Glean soils—VIIe, nonirrigated; Gando soil—VIIIs, nonirrigated
Range site: Loncan and Glean soils—028B030N; Gando soil—024X016N; Inclusion 1—none; Inclusion 2—025X003N; Inclusion 3—028B026N; Inclusion 4—025X005N

632—McConnel-Orovada-Misad association
Positions on landscape: Bolson floors, fan piedmonts

Composition
Major components:
McConnel gravelly loam, 2 to 8 percent slopes—50 percent
Orovada fine sandy loam, 2 to 4 percent slopes—20 percent
Misad gravelly very fine sandy loam, 2 to 4 percent slopes—15 percent
Contrasting inclusions:
Typic Camborthids, sandy-skeletal, mixed, mesic, 4 to 15 percent slopes—6 percent
Duric Camborthids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—6 percent
Duric Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—3 percent
Characteristics of the McConnel Soil

Classification: Xerollic Camborthids, sandy-skeletal, mixed, mesic
Positions on landscape: Beach terrace remnants
Parent material: Alluvium that includes some loess and ash over lacustrine sediment
Slope: 2 to 8 percent
Elevation: 6,100 to 6,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 12 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 12 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderately rapid over very rapid
Available water capacity: 2.9 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Orovada Soil

Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans, areas between beach terrace remnants
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 6,100 to 6,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate


**Characteristics of the Misad Soil**

*Classification*: Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

*Positions on landscape*: The lower areas on offshore bars

*Parent material*: Mixed alluvium that includes loess that is high in content of ash

*Slope*: 2 to 4 percent

*Elevation*: 6,100 to 6,300 feet

*Average annual precipitation*: About 8 inches

*Average annual air temperature*: About 49 degrees F

*Frost-free season*: About 110 days

*Dominant present vegetation*: Shadscale, bud sagebrush, bottlebrush squirreltail

**Typical Profile**

*Depth*: 0 to 7 inches

*Texture*: Gravelly very fine sandy loam

*Structure*: Platy

*Consistence*: Slightly hard, very friable

*Reaction*: Strongly alkaline

*Salinity*: 0 to 2 millimhos per centimeter

*Sodicity (SAR)*: 0 to 2

*Depth*: 7 to 31 inches

*Texture*: Stratified fine sandy loam to very gravelly sandy loam

*Structure*: Massive

*Consistence*: Slightly hard, very friable

*Reaction*: Strongly alkaline

*Salinity*: 8 to 16 millimhos per centimeter

*Sodicity (SAR)*: 2 to 10

*Depth*: 31 to 60 inches

*Texture*: Stratified very gravelly loamy sand to extremely gravelly coarse sand

*Structure*: Massive

*Consistence*: Soft, very friable

*Reaction*: Strongly alkaline

*Salinity*: 8 to 16 millimhos per centimeter

*Sodicity (SAR)*: 5 to 13

**Soil and Water Features**

*Depth to a seasonal high water table*: More than 60 inches

*Frequency of flooding*: None

*Permeability*: Moderately rapid

*Available water capacity*: 2.9 to 4.1 inches

*Water-supplying capacity*: 7 inches

*Runoff*: Slow

*Hydrologic group*: B

*Erosion factors (upper layer)*: K value—0.24; T value—5; wind erodibility group—4

*Hazard of erosion*: By water—slight; by wind—severe

*Shrink-swell potential*: Low

*Corrosivity*: To steel—high; to concrete—low

*Potential for frost action*: Low

**Contrasting Inclusions**

**Inclusion 1**

*Classification*: Typic Camborthids, sandy-skeletal, mixed, mesic

*Positions on landscape*: Convex barrier bars and offshore bars adjacent to lake plains

*Distinctive present vegetation*: Wyoming big sagebrush, black greasewood, basin wildrye

**Inclusion 2**

*Classification*: Duric Camborthids, loamy-skeletal, mixed, mesic

*Positions on landscape*: The higher remnant barrier and offshore bars

*Distinctive present vegetation*: Shadscale, bud sagebrush, black greasewood

**Inclusion 3**

*Classification*: Duric Camborthids, coarse-silty, mixed, mesic

*Positions on landscape*: Remnant lagoons and fan skirts

*Distinctive present vegetation*: Annuals

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**McConnel Soil**

*Wild herbaceous plants (nonirrigated)*: Fair

*Shrubs (nonirrigated)*: Fair

**Orovada Soil**

*Wild herbaceous plants (nonirrigated)*: Fair

*Shrubs (nonirrigated)*: Fair

**Misad Soil**

*Wild herbaceous plants (nonirrigated)*: Very poor

*Shrubs (nonirrigated)*: Very poor

**Suitability and Limitations for Selected Uses**

**McConnel Soil**

*Range seeding*: Fair—too arid, droughty

*Roadfill*: Good

*Topsoil*: Poor—too sandy, small stones, area reclaim

*Daily cover for landfill*: Poor—seepage, too sandy, small stones

*Shallow excavations*: Severe—cutbanks cave

*Local roads and streets*: Slight

*Pond reservoir areas*: Severe—seepage

*Embankments, dikes, and levees*: Severe—seepage, excess salt

*Sand*: Probable source

*Gravel*: Probable source

**Orovada Soil**

*Range seeding*: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Misad Soil
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: McConnel and Misad soils—Ive, irrigated, and VIIc, nonirrigated; Orovada soil—Ile, irrigated, and VIIb, nonirrigated
Range site: McConnel soil—024X005N; Orovada soil—028B010N; Misad soil—024X002N; Inclusion 1—024X022N; Inclusion 2—024X003N; Inclusion 3—024X004N

633—McConnel-Rasille-Wholan association

Positions on landscape: The lower fan piedmonts, beach terraces

Composition
Major components:
McConnel gravelly loam, 2 to 8 percent slopes—35 percent
Rasille silt loam, 0 to 2 percent slopes—25 percent
Wholan silt loam, 0 to 2 percent slopes—25 percent
Contrasting inclusions:
Orovada fine sandy loam, 2 to 4 percent slopes—8 percent
Defer gravelly fine sandy loam, 0 to 4 percent slopes—8 percent
Xerollic Haplargids, fine, montmorillonitic, mesic, 0 to 2 percent slopes—2 percent

Characteristics of the McConnel Soil
Classification: Xerollic Camborthids, sandy-skeletal, mixed, mesic

Positions on landscape: Beach terrace remnants that follow the contour of the shoreline
Parent material: Alluvium that includes some loess and ash over lacustrine sediment
Slope: 2 to 8 percent
Elevation: 6,000 to 6,300 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 12 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 12 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid over very rapid
Available water capacity: 2.9 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low
Lander County, Nevada, South Part

**Characteristics of the Rasille Soil**

*Classification:* Durixerollic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Fan skirts, areas between beach terrace remnants

*Parent material:* Silty alluvium derived from loess and various kinds of rock

*Slope:* 0 to 2 percent

*Elevation:* 6,000 to 6,300 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistency:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 15 inches

*Texture:* Silt loam

*Structure:* Prismatic

*Consistency:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 15 to 60 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Massive

*Consistency:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 10 to 12 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5

*Hazards of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Wholan Soil**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic

*Positions on landscape:* Inset fans

*Parent material:* Loess mantle over silty alluvium

*Slope:* 0 to 2 percent

*Elevation:* 6,000 to 6,300 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat

**Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Silt loam

*Structure:* Massive

*Consistency:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* Rare

*Permeability:* Moderate

*Available water capacity:* 10 to 11 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5

*Hazards of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Low

**Contrasting Inclusions**

**Inclusion 1**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* The highest parts of inset fans and fan drainageways

*Distinctive present vegetation:* Wyoming big sagebrush, bottlebrush squirreltail
Inclusion 2

classification: Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

Positions on landscape: Convex inset fans dissecting remnant shorelines

Distinctive present vegetation: Winterfat, bud sagebrush, Indian ricegrass

Inclusion 3

classification: Xerolic Hapludands, fine, montmorillonitic, mesic

Positions on landscape: Remnant lagoons

Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

McConnel Soil

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Rasille Soil

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Wholan Soil

Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

McConnel Soil

Range seeding: Fair—too arid, dry
Roadfill: Good
Topsoil: Poor—too sandy, small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage

Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

Rasille Soil

Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding, frost action
Pond reservoir areas: Moderate—seepage

Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Wholan Soil

Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Pond reservoir areas: Moderate—seepage

Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fine
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Rasille Soil

Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Wholan Soil

Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Land capability classification: McConnel soil—IVe, irrigated, and VIIa, nonirrigated; Rasille soil—IIC, irrigated, and Vlc, nonirrigated; Wholan soil—IIC, irrigated, and Vlc, nonirrigated

Range site: McConnel soil—024X005N; Rasille soil—028B010N; Wholan soil—024X004N; Inclusion 1—028B010N; Inclusion 2—028B013N; Inclusion 3—024X006N

635—McConnel-Rasille association

Positions on landscape: The lower fan piedmonts

Composition

Major components:

McConnel gravelly loam, 2 to 4 percent slopes—55 percent
Rasille silt loam, gravelly substratum, 0 to 2 percent slopes—30 percent
Contrasting inclusions:

Orovada fine sandy loam, 0 to 2 percent slopes—8 percent
Alluv fine sandy loam, 2 to 4 percent slopes—4 percent
Durixerolic Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—3 percent

Characteristics of the McConnel Soil

Classification: Xerolic Camborthids, sandy-skeletal, mixed, mesic

Positions on landscape: Beach terrace remnants that follow the contour of the shoreline
Parent material: Alluvium that includes some loess and ash over lacustrine sediment
Slope: 2 to 4 percent
Elevation: 5,800 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Gravely loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 12 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 12 to 60 inches
Texture: Stratified very gravely sandy loam to extremely gravely coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid over very rapid
Available water capacity: 2.9 to 4.2 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—2;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Ralite Soil
Classification: Durixerollic Camborthids, coarse-silty, mixed, mesic

Positions on landscape: Areas between beach terrace remnants and fan skirts
Parent material: Silty alluvium derived from loess and various kinds of rock
Slope: 0 to 2 percent
Elevation: 5,800 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Depth: 0 to 6 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 15 inches
Texture: Silt loam
Structure: Prismatic
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 15 to 41 inches
Texture: Silt loam, very fine sandy loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Depth: 41 to 60 inches
Texture: Stratified fine sandy loam to very gravely coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 7.6 to 9.3 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Inclusion 2
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Nonburied fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Inclusion 3
Classification: Durixerollic Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Sickle saltbush, halogoton, bluegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

McConnel Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Rasille Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

McConnel Soil
Range seeding: Fair—too arid, droughty
Roadfill: Good
Topsoil: Poor—too sandy, small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

Rasille Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—area reclaim, excess salt
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Rasille Soil
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Land capability classification: McConnel soil—IVe, irrigated, and VIIa, nonirrigated; Rasille soil—IIIc, irrigated, and Vlc, nonirrigated
Range site: McConnel soil—024X005N; Rasille soil—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—024X012N

636—McConnel-Defler-Rasille association
Positions on landscape: The lower fan piedmonts and fan skirts

Composition

Major components:
McConnel gravelly loam, 2 to 4 percent slopes—40 percent
Defler gravelly fine sandy loam, 2 to 4 percent slopes—30 percent
Rasille silt loam, 0 to 2 percent slopes—15 percent
Contrasting inclusions:
Typic Camborthids, coarse-loamy, mixed, mesic, 0 to 2 percent slopes—9 percent
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—4 percent
Broyles very fine sandy loam, 0 to 2 percent slopes—2 percent

Characteristics of the McConnel Soil
Classification: Xerollic Camborthids, sandy-skeletal, mixed, mesic
Positions on landscape: Beach terrace remnants that follow the contour of the shoreline
Parent material: Alluvium that includes some loess and ash over lacustrine sediment
Slope: 2 to 4 percent
Elevation: 6,000 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 6 to 12 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 12 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid over very rapid
Available water capacity: 2.9 to 4.2 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Defler Soil
Classification: Typic Torrithents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Convex inset fans
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 4 percent
Elevation: 6,200 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, winterfat

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 5 to 35 inches
Texture: Very gravelly fine sandy loam, very gravelly sandy loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 35 to 70 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Massive
Consistency: Hard, very friable
Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately rapid
Available water capacity: 2.9 to 4.4 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Rasile Soil
Classification: Durixerollic Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Smooth fan skirts
Parent material: Silty alluvium derived from loess and various kinds of rock
Slope: 0 to 2 percent
Elevation: 6,000 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Depth: 0 to 6 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Position on landscape: The lower inset fans

Distinctive present vegetation: Bud sagebrush, winterfat

Inclusion 2
Classification: Xerolic Camborthids, loamy-skeletal, mixed, mesic

Position on landscape: Fan drainageways

Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Duric Camborthids, coarse-loamy, mixed, mesic

Position on landscape: The lower fan skirt margins

Distinctive present vegetation: Shadscale, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

McConnel Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Defler Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Rasille Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

McConnel Soil
Range seeding: Fair—too arid, droughty
Roadfill: Good
Topsoil: Poor—too sandy, small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

Defler Soil
Range seeding: Poor—droughty, too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—small stones
Gravel: Probable source
Rasille Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices
Rasille Soil
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups
Land capability classification: McConnel soil—IVe, irrigated, and VIIc, nonirrigated; Defler soil—IVe, irrigated, and VIIc, nonirrigated; Rasille soil—IIIc, irrigated, and VIc, nonirrigated
Range site: McConnel soil—024X005N; Defler soil—024X004N; Rasille soil—028B010N; Inclusion 1—024X004N; Inclusion 2—028B010N; Inclusion 3—024X002N

637—McConnel-Orovada association
Positions on landscape: Fan skirts, inset fans

Composition
Major components:
McConnel fine sandy loam, 0 to 2 percent slopes—35 percent
Orovada very fine sandy loam, rarely flooded, 0 to 2 percent slopes—25 percent
McConnel gravelly fine sandy loam, 0 to 2 percent slopes—25 percent
Contrasting inclusions:
Duric Camborthids, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—6 percent
Orovada fine sandy loam, 0 to 4 percent slopes—6 percent
Wholan silt loam, gravelly substratum, 0 to 2 percent slopes—3 percent

Characteristics of the McConnel Soil
Classification: Xerollic Camborthids, sandy-skeletal, mixed, mesic
Positions on landscape: Broad inset fan remnants
Parent material: Alluvium that includes some loess and ash over lacustrine sediment
Slope: 0 to 2 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Fine sandy loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 6 to 12 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 12 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid over very rapid
Available water capacity: 2.9 to 4.2 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.37; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Orovada Soil
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirt remnants
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 0 to 2 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Very fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 9.5 to 11.0 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the McConel Soil, Gravelly
Classification: Xerolic Camborthids, sandy-skeletal, mixed, mesic
Positions on landscape: Outer margins of inset fan remnants near fan skirts
Parent material: Alluvium that includes some loess and ash over lacustrine sediment

Slope: 0 to 2 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 12 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 12 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid over very rapid
Available water capacity: 2.7 to 4.0 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Duric Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan skirt remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Adjacent to channeled areas on the lower inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Typic Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Convex, occasionally flooded inset fans
Distinctive present vegetation: Bottlebrush squirreltail, wintertan

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

McConnel Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

McConnel Soil, Gravelly
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

McConnel Soil
Range seeding: Fair—too arid, droughty
Roadfill: Good
Topsoil: Poor—too sandy, small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

638—McConnel-Wholan association
Positions on landscape: Fan skirts, inset fans

Composition

Major components:
McConnel fine sandy loam, 0 to 2 percent slopes—75 percent
Wholan silt loam, occasionally flooded, 0 to 2 percent slopes—20 percent
Contrasting inclusion:
Orovada very fine sandy loam, 0 to 4 percent slopes—5 percent

Characteristics of the McConnel Soil
Classification: Xerolic Camborthids, sandy-skeletal, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Alluvium that includes some loess and ash over lacustrine sediment
Slope: 0 to 2 percent
Elevation: 6,200 to 6,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 milliMhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 12 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 milliMhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 12 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 2 to 4 milliMhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid over very rapid
Available water capacity: 2.9 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Wholan Soil
Classification: Typic Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Narrow inset fans
Parent material: Loess mantle over silty alluvium
Slope: 0 to 2 percent
Elevation: 6,200 to 6,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat

Typical Profile
Depth: 0 to 6 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 2 to 4 milliMhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 60 inches
Texture: Silt loam, very fine sandy loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 milliMhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Occasional for very brief periods in December through April
Permeability: Moderate
Available water capacity: 10 to 12 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusion
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Broad areas on inset fans
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

McConnel Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Wholan Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

McConnel Soil
Range seeding: Fair—too arid, droughty
Roadfill: Good
Topsoil: Poor—too sandy, small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

***Wholan Soil***

Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Wholan Soil

Drainage: Deep to water
Irrigation: Erodes easily, flooding
Terraces and diversions: Erodes easily

Interpretive Groups

Land capability classification: McConnel soil—I IVs, irrigated, and VII, nonirrigated; Wholan soil—I I W, irrigated, and VII, nonirrigated
Range site: McConnel soil—02BB010N; Wholan soil—02BB013N; Inclusion—02BB010N

670—Fillaran-Pineal-Kingingham association

Positions on landscape: Fan piedmonts

Composition

Major components:
Fillaran silt loam, 2 to 4 percent slopes—40 percent
Pineal gravelly fine sandy loam, 4 to 8 percent slopes—30 percent
Kingingham gravelly very fine sandy loam, 2 to 4 percent slopes—15 percent
Contrasting inclusions:
Allor gravelly loam, 4 to 15 percent slopes—8 percent
Orovada fine sandy loam, 2 to 4 percent slopes—7 percent

Characteristics of the Fillaran Soil

Classification: Haploxerolic Nadurargids, fine, montmorillonitic, mesic

Positions on landscape: The upper summits of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 7 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 7 to 12 inches
Texture: Gravelly silt loam
Structure: Platy
Consistency: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 5 to 10
Depth: 12 to 33 inches
Texture: Clay, gravelly clay
Structure: Prismatic
Consistency: Very hard, very firm
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 33 to 60 inches
Material: Cemented hardpan

Soil and Water Features

Depth to the hardpan: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 4.5 to 5.5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.49; T value—2; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low
Characteristics of the Pineval Soil

Classification: Durixerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan aprons
Parent material: Mixed alluvium
Slope: 4 to 8 percent
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 40 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.0 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Kingingham Soil

Classification: Typic Nadurargids, fine, montmorillonitic, mesic
Positions on landscape: The lower summits of fan piedmont remnants
Parent material: Thin loess mantle over alluvium derived from various kinds of rock
Slope: 2 to 4 percent
Elevation: 5,600 to 5,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, shadscale, bud sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 7 inches
Texture: Gravelly very fine sandy loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 7 to 22 inches
Texture: Gravelly clay, gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 40
Depth: 22 to 60 inches
Material: Indurated hardpan
Structure: Massive
Consistence: Extremely hard, extremely firm

Soil and Water Features
Depth to the hardpan: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 3.5 to 4.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low
Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Indian ricegrass, bluegrass. Wyoming big sagebrush

Inclusion 2
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush, bluegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Fillran Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Pineval Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Kingham Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Fillran Soil
Range seeding: Poor—excess sodium
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, excess sodium
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Moderate—cemented pan, slope
Embankments, dikes, and levees: Severe—excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Pineval Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action

Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Kingham Soil
Range seeding: Poor—excess sodium, rooting depth
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, excess salt
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Moderate—cemented pan, slope
Embankments, dikes, and levees: Severe—excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Fillran and Kingham soils—VII, nonirrigated; Pineval soil—IVe, irrigated, and VIIIs, nonirrigated
Range site: Fillran and Pineval soils—02B010N;
Kingham soil—024X002N; Inclusions 1 and 2—02B010N

674—Fillran-Buffaran association

Positions on landscape: Fan piedmonts

Composition

Major components:
Fillran very gravelly loam, 2 to 4 percent slopes—50 percent
Buffaran extremely gravelly loam, 8 to 30 percent slopes—35 percent

Contrasting inclusions:
Pineval gravelly loam, 2 to 8 percent slopes—8 percent
Alluv gravelly loam, 4 to 8 percent slopes—4 percent
Haplic Nadurargids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—3 percent

Characteristics of the Fillran Soil

Classification: Haploxerollic Nadurargids, fine, montmorillonitic, mesic
Positions on landscape: Summits of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 10 percent pebbles
Depth: 0 to 7 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 7 to 12 inches
Texture: Gravelly silt loam
Structure: Platy
Consistency: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 12 to 33 inches
Texture: Clay, gravelly clay
Structure: Prismatic
Consistency: Very hard, very firm
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 33 to 60 inches
Material: Cemented hardpan

Soil and Water Features
Depth to the hardpan: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 4.5 to 5.5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Buffaran Soil
Classification: Xerollic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: Shoulder slopes and side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 8 to 30 percent

Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass, big sagebrush

Typical Profile
Rock fragments on surface: 65 percent pebbles
Depth: 0 to 5 inches
Texture: Extremely gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 5 to 16 inches
Texture: Clay, gravelly clay, gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 16 to 27 inches
Material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 27 to 60 inches
Material: Cemented hardpan
Structure: Platy
Consistency: Very hard, very firm

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Foot slopes of fan piedmonts
Distinctive present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Inclusion 2
Classification: Durixerollic Hapludands, fine-loamy, mixed, mesic
Positions on landscape: The lower side slopes of fan piedmont remnants
Distinctive present vegetation: Bottlebrush squirreltail, Wyoming big sagebrush

Inclusion 3
Classification: Haplic Nadurargids, loamy-skeletal, mixed, mesic
Positions on landscape: The lower summits and shoulder slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Filiran Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Buffaran Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Filiran Soil
Range seeding: Poor—small stones, excess sodium
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, excess sodium
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Moderate—cemented pan, slope Embankments, dikes, and levees: Severe—excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Filiran and Buffaran soils—VII, nonirrigated
Range site: Filiran and Buffaran soils—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—024X002N

675—Filiran-Buffaran-Orovada association
Positions on landscape: Fan piedmonts

Composition
Major components:
Filiran very gravelly loam, 2 to 4 percent slopes—40 percent
Buffaran gravelly loam, 4 to 8 percent slopes—25 percent
Orovada fine sandy loam, 2 to 4 percent slopes—20 percent
Contrasting inclusions:
Chiara gravelly loam, 4 to 15 percent slopes—8 percent
Pineal gravelly loam, 4 to 8 percent slopes—7 percent

Characteristics of the Filiran Soil
Classification: Haploxerolic Nadurargids, fine, montmorillonitic, mesic
Positions on landscape: Summits of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 40 percent pebbles
Depth: 0 to 7 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 7 to 12 inches
Texture: Gravelly silt loam
Structure: Platy
Consistency: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 12 to 33 inches
Texture: Clay, gravelly clay
Structure: Prismatic
Consistency: Very hard, very firm
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 33 to 60 inches
Material: Cemented hardpan

Soil and Water Features
Depth to the hardpan: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 4.5 to 5.5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—2;
wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Buffaran Soil
Classification: Xerollic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: Shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 8 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass, big sagebrush

Typical Profile
Rock fragments on surface: 15 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy

Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 5 to 16 inches
Texture: Clay, gravelly clay, gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 16 to 27 inches
Material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 27 to 60 inches
Material: Cemented hardpan
Structure: Platy
Consistency: Very hard, very firm

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Orovada Soil
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Suitability for Wildlife Habitat Elements

Filiran Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Buffaran Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Filiran Soil
Range seeding: Poor—small stones, excess sodium
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, excess sodium
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Moderate—cemented pan, slope
Embankments, dikes, and levees: Severe—excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Buffaran Soil
Range seeding: Poor—droughty, rooting depth
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—cemented pan, too clayey, small stones
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, shrink-swell, low strength
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Filiran and Buffaran soils—

Contrasting Inclusions

Inclusion 1
Classification: Xericollic Durorthids, loamy, mixed, mesic, shallow
Positions on landscape: South-facing side slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Durixerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: The higher parts of inset fans
Distinctive present vegetation: Bluegrass, rabbitbrush, Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat
Vils, nonirrigated; Orovada soil—ile, irrigated, and Vlc, nonirrigated

Range site: Filirian, Buffaran, and Orovada soils—028B010N; Inclusions 1 and 2—028B010N

680—Skullwak-Umberland-Wendane association

Positions on landscape: Bolson floors

Composition

Major components:
Skullwak silt loam, frequently flooded, 0 to 2 percent slopes—35 percent
Umberland silt loam, occasionally flooded, 0 to 2 percent slopes—35 percent
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—15 percent

Contrasting inclusions:
Playas—7 percent
Batan silt loam, 0 to 2 percent slopes—5 percent
Dune land, clay—3 percent

Characteristics of the Skullwak Soil

Classification: Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic
Positions on landscape: The higher lake plains
Parent material: Lacustrine sediment
Slope: 0 to 2 percent
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Inland saltgrass, Nuttall alkali grass, alkali rabbitbrush, rubber rabbitbrush

Typical Profile

Depth: 0 to 10 inches
Texture: Silt loam
Structure: Platy
Consistence: Hard, friable
Reaction: Very strongly alkaline
Salinity: 16 to 40 millimhos per centimeter
Sodicity (SAR): 25 to 46

Depth: 10 to 60 inches
Texture: Silty clay loam, silty clay
Structure: Massive
Consistence: Very hard, very firm
Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features

Depth to a seasonal high water table: 18 to 36 inches
Frequency of flooding: Frequent for brief periods in December through June
Permeability: Very slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 10 inches
Runoff: Slow
Hydrologic group: D

Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Characteristics of the Umberland Soil

Classification: Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic
Positions on landscape: The lower lake plains with coppice mounds
Parent material: Silty lacustrine sediment derived from various kinds of rock
Slope: 0 to 2 percent
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye

Typical Profile

Depth: 0 to 7 inches
Texture: Silt loam
Structure: Granular
Consistence: Slightly hard, friable
Reaction: Very strongly alkaline
Salinity: 40 to 60 millimhos per centimeter
Sodicity (SAR): 46 to 60

Depth: 7 to 60 inches
Texture: Silty clay, silty clay loam
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Very strongly alkaline
Salinity: 20 to 40 millimhos per centimeter
Sodicity (SAR): 30 to 46

Soil and Water Features

Depth to a seasonal high water table: 30 to 60 inches
Frequency of flooding: Occasional for long periods in December through June
Permeability: Very slow
Available water capacity: 9 to 12 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Wendane Soil
Classification: Aeristic Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flats
Parent material: Silty alluvium derived from volcanic rock, tuff, loess, and ash
Slope: 0 to 2 percent
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Black greasewood, basin wildrye

Typical Profile
Depth: 0 to 7 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 30 to 50 millimhos per centimeter
Sodicity (SAR): 13 to 25

Depth: 7 to 18 inches
Texture: Silt loam, very fine sandy loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Depth: 18 to 60 inches
Texture: Stratified silt loam to clay loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: 30 to 48 inches
Frequency of flooding: Frequent for brief to long periods
   in December through June
Permeability: Moderately slow
Available water capacity: 11 to 12.5 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C

Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions
Inclusion 1
Positions on landscape: Sink areas
Distinctive present vegetation: None

Inclusion 2
Classification: Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Dissected lake plain remnants
Distinctive present vegetation: Black greasewood, shadscale, bud sagebrush

Inclusion 3
Positions on landscape: Near Playas
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Skullwak Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Poor
Shallow water areas: Poor

Umblerd Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Poor
Shallow water areas: Poor

Wendane Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Poor
Shallow water areas: Poor

Suitability and Limitations for Selected Uses

Skullwak Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—shrink-swell, low strength
Topsoil: Poor—too clayey, excess salt
Daily cover for landfill: Poor—too clayey, hard to pack
Shallow excavations: Severe—wetness
Local roads and streets: Severe—shrink-swell, low strength, flooding
Pond reservoir areas: Slight
Embarkments, dikes, and levees: Severe—wetness, excess salt
**Sand:** Improbable source—excess fines  
**Gravel:** Improbable source—excess fines  

### Umbreland Soil  
**Range seeding:** Poor—excess salt, excess sodium, too crusty  
**Roadfill:** Poor—low strength, shrink-swell  
**Topsoil:** Poor—excess salt, excess sodium, too clayey  
**Daily cover for landfill:** Poor—too clayey, hard to pack, excess salt  
**Shallow excavations:** Moderate—too clayey, wetness, flooding  
**Local roads and streets:** Severe—low strength, flooding, shrink-swell  
**Pond reservoir areas:** Slight  
**Embankments, dikes, and levees:** Severe—excess salt, excess sodium  
**Sand:** Improbable source—excess fines  
**Gravel:** Improbable source—excess fines  

### Wendane Soil  
**Range seeding:** Poor—excess salt, excess sodium  
**Roadfill:** Poor—low strength  
**Topsoil:** Poor—excess salt, excess sodium  
**Daily cover for landfill:** Poor—excess salt, excess sodium  
**Shallow excavations:** Moderate—wetness, flooding  
**Local roads and streets:** Severe—flooding, frost action  
**Pond reservoir areas:** Moderate—seepage  
**Embankments, dikes, and levees:** Severe—excess salt, excess sodium  
**Sand:** Improbable source—excess fines  
**Gravel:** Improbable source—excess fines  

### Interpretive Groups  
**Land capability classification:** Skullwak, Umbreland, and Wendane soils—VIIw, nonirrigated  
**Range site:** Skullwak soil—024X044N; Umbreland soil—024X011N; Wendane soil—024X007N; Inclusion 1—one; Inclusion 2—024X003N; Inclusion 3—one  

### 683—Ocala-Sonoma-Paranat association  
**Positions on landscape:** Flood plains, alluvial flats  

### Composition  
**Major components:**  
Ocala silt loam, occasionally flooded, 0 to 2 percent slopes—40 percent  
Sonoma silt loam, occasionally flooded, strongly saline, 0 to 2 percent slopes—25 percent  
Paranat silt loam, strongly saline, 0 to 2 percent slopes—20 percent  

### Contrasting Inclusions:  
Aquic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—8 percent  
Aeric Halaquepts, fine-silty, mixed, mesic, 0 to 2 percent slopes—5 percent  
Durorthic Torriorthents, coarse-silty, mixed (calcareous), mesic, 2 to 4 percent slopes—2 percent  

### Characteristics of the Ocala Soil  
**Classification:** Aeric Halaquepts, fine-silty, mixed (calcareous), mesic  
**Positions on landscape:** Alluvial flats  
**Parent material:** Mixed silty alluvium that includes volcanic ash  
**Slope:** 0 to 2 percent  
**Elevation:** 5,700 to 5,900 feet  
**Average annual precipitation:** About 7 inches  
**Average annual air temperature:** About 49 degrees F  
**Frost-free season:** About 120 days  
**Dominant present vegetation:** Black greasewood, rubber rabbitbrush, basin wildrye, alkali sacaton  

### Typical Profile  
**Depth:** 0 to 4 inches  
**Texture:** Silt loam  
**Structure:** Platy  
**Consistence:** Slightly hard, friable  
**Reaction:** Very strongly alkaline  
**Salinity:** 16 to 30 millimhos per centimeter  
**Sodicity (SAR):** 30 to 46  
**Depth:** 4 to 36 inches  
**Texture:** Silt loam, silty clay loam  
**Structure:** Massive  
**Consistence:** Hard, brittle  
**Reaction:** Strongly alkaline  
**Salinity:** 16 to 30 millimhos per centimeter  
**Sodicity (SAR):** 20 to 46  
**Depth:** 36 to 60 inches  
**Texture:** Silt loam, silty clay loam  
**Structure:** Massive  
**Consistence:** Very hard, very firm  
**Reaction:** Strongly alkaline  
**Salinity:** 8 to 16 millimhos per centimeter  
**Sodicity (SAR):** 20 to 35  

### Soil and Water Features  
**Depth to a seasonal high water table:** 42 to 60 inches  
**Frequency of flooding:** Occasional for brief to long periods in February through May  
**Permeability:** Slow  
**Available water capacity:** 11 to 12 inches  
**Water-supplying capacity:** 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.43; T value—5;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

**Characteristics of the Sonoma Soil**

Classification: Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Stream flood plains
Parent material: Mixed silty alluvium that includes
volcanic ash
Slope: 0 to 2 percent
Elevation: 5,700 to 5,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Alkali sacaton, alkali
cordgrass, inland saltgrass, basin wildrye

**Typical Profile**

Depth: 0 to 12 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 13 to 25

Depth: 12 to 60 inches
Texture: Silt loam, silty clay loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13

**Soil and Water Features**

Depth to a seasonal high water table: 18 to 36 inches
Frequency of flooding: Frequent for brief to long periods
in December through June
Permeability: Moderately slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 12 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: High

**Contrasting Inclusions**

Inclusion 1
Classification: Aquic Torriorthents, fine-silty, mixed
(calcareous), mesic
Positions on landscape: Flood plain remnants
Distinctive present vegetation: Basin wildrye, basin big
sagebrush, black greasewood
Inclusion 2  
Classification: Aeric Halaquepts, fine-silty, mixed, mesic  
Positions on landscape: Stream flood plain remnants, braided channels  
Distinctive present vegetation: Basin wildrye, inland saltgrass, basin big sagebrush

Inclusion 3  
Classification: Durothic Torriorthents, coarse-silty, mixed (calcareous), mesic  
Positions on landscape: Fan skirt margins adjacent to alluvial flats and flood plains  
Distinctive present vegetation: Wyoming big sagebrush, rubber rabbitbrush, black greasewood

Major Current Uses
Livestock grazing, wildlife habitat, native pasture

Suitability for Wildlife Habitat Elements

Ocala Soil  
Wild herbaceous plants (nonirrigated): Very poor  
Shrubs (nonirrigated): Very poor  
Wetland plants: Fair  
Shallow water areas: Fair

Sonoma Soil  
Wild herbaceous plants (nonirrigated): Poor  
Shrubs (nonirrigated): Poor  
Wetland plants: Fair  
Shallow water areas: good

Paranat Soil  
Wild herbaceous plants (nonirrigated): Fair  
Shrubs (nonirrigated): Fair  
Wetland plants: Good  
Shallow water areas: Fair

Suitability and Limitations for Selected Uses

Ocala Soil  
Range seeding: Poor—excess salt, excess sodium  
Roadfill: Poor—low strength  
Topsoil: Poor—excess salt, excess sodium  
Daily cover for landfill: Poor—excess salt, excess sodium  
Shallow excavations: Moderate—wetness, flooding  
Local roads and streets: Severe—low strength, flooding, frost action  
Pond reservoir areas: Slight  
Embarkments, dikes, and levees: Severe—excess salt, excess sodium  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines

Sonoma Soil  
Range seeding: Poor—excess salt  
Roadfill: Poor—low strength  
Topsoil: Fair—excess salt, too clayey  
Daily cover for landfill: Fair—too clayey, wetness

Paranat Soil  
Range seeding: Poor—excess salt  
Roadfill: Poor—low strength  
Topsoil: Poor—excess salt  
Dry soil cover for landfills: Fair—too clayey, wetness  
Shallow excavations: Severe—wetness  
Local roads and streets: Severe—low strength, frost action, flooding  
Pond reservoir areas: Slight  
Embarkments, dikes, and levees: Severe—piping, excess salt, wetness  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Sonoma Soil  
Drainage: Frost action, flooding  
Irrigation: Wetness, erodes easily  
Terraces and diversions: Wetness, erodes easily

Paranat Soil  
Drainage: Flooding, frost action, excess salt  
Irrigation: Wetness, erodes easily, flooding  
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Land capability classification: Ocala, Sonoma, and Paranat soils—VIIIw, nonirrigated  
Range site: Ocala soil—024X007N; Sonoma and Paranat soils—024X009N; Inclusion 1—024X006N; Inclusion 2—024X010N; Inclusion 3—024X022N

700—Orovada-Rasille-Wholan association  
Positions on landscape: Piedmont slopes

Composition

Major components:  
Orovada fine sandy loam, 0 to 2 percent slopes—35 percent  
Rasille silt loam, 0 to 2 percent slopes—30 percent  
Wholan silt loam, 0 to 2 percent slopes—20 percent  
Contrasting inclusions:  
Duric Haplargids, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—7 percent  
Aquic Duric Haploxerolls, fine-loamy, mixed, mesic, 0 to 2 percent slopes—4 percent
Xerolic Camborthids, sandy-skeletal, mixed, mesic, 0 to 4 percent slopes—2 percent
Cumulic Haploxerolls, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—2 percent

**Characteristics of the Orovada Soil**

*Classification:* Durixerolic Camborthids, coarse-loamy, mixed, mesic
*Positions on landscape:* Inset fan remnants
*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium
*Slope:* 0 to 2 percent
*Elevation:* 5,900 to 6,300 feet
*Average annual precipitation:* About 8 inches
*Average annual air temperature:* About 48 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

*Depth:* 0 to 8 inches
*Texture:* Fine sandy loam
*Structure:* Subangular blocky
*Consistency:* Slightly hard, very friable
*Reaction:* Neutral
*Salinity:* 0 to 2 millimhos per centimeter
*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 26 inches
*Texture:* Fine sandy loam, loam
*Structure:* Subangular blocky
*Consistency:* Slightly hard, very friable
*Reaction:* Moderately alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Sodicity (SAR):* 0 to 2

*Depth:* 26 to 61 inches
*Texture:* Stratified fine sandy loam to silt loam
*Structure:* Massive
*Consistency:* Slightly hard, friable
*Reaction:* Moderately alkaline
*Salinity:* 4 to 8 millimhos per centimeter
*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderate
*Available water capacity:* 9 to 11 inches
*Water-supplying capacity:* 8 inches
*Runoff:* Slow
*Hydrologic group:* B
*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3
*Hazard of erosion:* By water—slight; by wind—severe
*Shrink-swell potential:* Low
*Corrosivity:* To steel—high; to concrete—low
*Potential for frost action:* Moderate

**Characteristics of the Raselle Soil**

*Classification:* Durixerolic Camborthids, coarse-silty, mixed, mesic
*Positions on landscape:* Fan skirts
*Parent material:* Silty alluvium derived from loess and various kinds of rock
*Slope:* 0 to 2 percent
*Elevation:* 5,900 to 6,300 feet
*Average annual precipitation:* About 8 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**

*Depth:* 0 to 6 inches
*Texture:* Silt loam
*Structure:* Platy
*Consistency:* Slightly hard, very friable
*Reaction:* Mildly alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Sodicity (SAR):* 0 to 2

*Depth:* 6 to 15 inches
*Texture:* Silt loam
*Structure:* Prismatic
*Consistency:* Slightly hard, very friable
*Reaction:* Moderately alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Sodicity (SAR):* 0 to 2

*Depth:* 15 to 60 inches
*Texture:* Silt loam, very fine sandy loam
*Structure:* Massive
*Consistency:* Slightly hard, friable
*Reaction:* Moderately alkaline
*Salinity:* 2 to 8 millimhos per centimeter
*Sodicity (SAR):* 2 to 10

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* Rare
*Permeability:* Moderate
*Available water capacity:* 10 to 12 inches
*Water-supplying capacity:* 8 inches
*Runoff:* Slow
*Hydrologic group:* B
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—6
*Hazard of erosion:* By water—slight; by wind—slight
Shrink-swell potential: Low  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Moderate  

**Characteristics of the Wholan Soil**  
Classification: Typic Camborthids, coarse-silty, mixed, mesic  
Positions on landscape: Inset fans  
Parent material: Loess mantle over silty alluvium  
Slope: 0 to 2 percent  
Elevation: 5,900 to 6,300 feet  
Average annual precipitation: About 8 inches  
Average annual air temperature: About 49 degrees F  
Frost-free season: About 120 days  
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat  

**Typical Profile**  
Depth: 0 to 6 inches  
Texture: Silt loam  
Structure: Platy  
Consistence: Slightly hard, very friable  
Reaction: Mildly alkaline  
Salinity: 2 to 4 millimhos per centimeter  
Sodicity (SAR): 0 to 2  

Depth: 6 to 60 inches  
Texture: Silt loam, very fine sandy loam  
Structure: Massive  
Consistence: Slightly hard, very friable  
Reaction: Strongly alkaline  
Salinity: 4 to 8 millimhos per centimeter  
Sodicity (SAR): 0 to 5  

**Soil and Water Features**  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: Rare  
Permeability: Moderate  
Available water capacity: 10 to 11 inches  
Water-supplying capacity: 8 inches  
Runoff: Slow  
Hydrologic group: B  
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5  
Hazard of erosion: By water—slight; by wind—severe  
Shrink-swell potential: Low  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Low  

**Distinctive present vegetation:** Shadscale, bottlebrush squirreltail, halogent

**Inclusion 2**  
Classification: Aquic Duric Haplooxerolls, fine-loamy, mixed, mesic  
Positions on landscape: Fan skirt margins  
Distinctive present vegetation: Basin wildrye, basin big sagebrush, black greasewood  

**Inclusion 3**  
Classification: Xerollic Camborthids, sandy-skeletal, mixed, mesic  
Positions on landscape: Offshore bars  
Distinctive present vegetation: Wyoming big sagebrush  

**Inclusion 4**  
Classification: Cumulic Haplooxerolls, loamy-skeletal, mixed, mesic  
Positions on landscape: Banks adjacent to deeply entrenched channels  
Distinctive present vegetation: Basin wildrye, basin big sagebrush  

**Major Current Uses**  
Livestock grazing, wildlife habitat  

**Suitability for Wildlife Habitat Elements**  

**Orovada Soil**  
Wild herbaceous plants (nonirrigated): Fair  
Shrubs (nonirrigated): Fair  

**Rasille Soil**  
Wild herbaceous plants (nonirrigated): Fair  
Shrubs (nonirrigated): Fair  

**Wholan Soil**  
Wild herbaceous plants (nonirrigated): Poor  
Shrubs (nonirrigated): Poor  

**Suitability and Limitations for Selected Uses**  

**Orovada Soil**  
Range seeding: Fair—too arid  
Roadfill: Good  
Topsoil: Fair—small stones, thin layer  
Daily cover for landfill: Good  
Shallow excavations: Slight  
Local roads and streets: Moderate—frost action  
Pond reservoir areas: Moderate—seepage  
Embankments, dikes, and levees: Severe—piping  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines  

**Rasille Soil**  
Range seeding: Fair—too arid  
Roadfill: Good  
Topsoil: Fair—excess salt  
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Wholan Soil**
Range seeding: Fair—too arid, excess salt
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Restrictive Features for Selected Practices**

**Rasille Soil**
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

**Wholan Soil**
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

**Interpretive Groups**
Land capability classification: Orovada and Wholan soils—IIc, irrigated, and Vlc, nonirrigated; Rasille soil—IIIc, irrigated, and Vlc, nonirrigated
Range site: Orovada and Rasille soils—028B010N; Wholan soil—024X004N; Inclusion 1—024X002N; Inclusion 2—024X006N; Inclusion 3—028B010N; Inclusion 4—028B003N

**Characteristics of the Orovada Soil**
Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts, inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 4,800 to 5,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**
Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 20 to 60 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

**Soil and Water Features**
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9 to 11 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate
Contrasting Inclusions

Inclusion 1
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The higher fan skirt remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: The slightly dissected, lower inset fans
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Classification: Xerolic Camborthids, sandy, mixed, mesic
Positions on landscape: Sand sheets
Distinctive present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Orovada soil—Ile, irrigated, and Vlc, nonirrigated
Range site: Orovada soil—028B010N; Inclusions 1 and 2—024X002N; Inclusion 3—024X017N

702—Orovada-Creemone association

Positions on landscape: Fan skirts, inset fans

Composition
Major components:
Orovada fine sandy loam, 2 to 4 percent slopes—55 percent
Creemon fine sandy loam, strongly saline, 0 to 2 percent slopes—30 percent

Contrasting inclusions:
Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—8 percent
Duric Camborthids, coarse-loamy, mixed, mesic, 0 to 4 percent slopes—4 percent
Typic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—3 percent

Characteristics of the Orovada Soil
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Broad inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,500 to 6,100 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 20 to 60 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Creemont Soil
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Mixed silty alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,500 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, black greasewood, Indian ricegrass

Typical Profile
Depth: 0 to 10 inches
Texture: Fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 10 to 20

Depth: 10 to 15 inches
Texture: Silt loam, very fine sandy loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 46

Depth: 15 to 45 inches
Texture: Stratified very fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 30

Depth: 45 to 60 inches
Texture: Stratified gravelly very fine sandy loam to fine sandy loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10 to 11 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan skirt margins bordering fan pediment remnants
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 2
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirt margins bordering alluvial flat
Distinctive present vegetation: Fourwing saltbush, winterfat, bud sagebrush

Inclusion 3
Classification: Typtic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Areas adjacent to active channels
Distinctive present vegetation: Shadscale, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Creemont Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses
Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Creemon Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices
Creemon Soil
Drainage: Deep to water
Irrigation: Erodes easily, excess salt, soil blowing
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups
Land capability classification: Orovada soil—Ile, irrigated, and Vlc, nonirrigated; Creemon soil—IIs, irrigated, and Vlls, nonirrigated
Range site: Orovada soil—028B010N; Creemon soil—024X003N; Inclusion 1—024X006N; Inclusion 2—028B014N; Inclusion 3—024X002N

703—Orovada fine sandy loam, 0 to 2 percent slopes
Positions on landscape:Inset fans

Composition
Major component:
Orovada fine sandy loam, 0 to 2 percent slopes—85 percent
Contrasting inclusions:
Chedehap sandy loam, 0 to 2 percent slopes—10 percent
Xeric Torrithents, loamy-skeletal, mixed, mesic—3 percent
Durixerollic Camborthids, coarse-loamy, mixed, mesic—2 percent

Characteristics of the Orovada Soil
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 9.0 to 10.5 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate
Contrasting Inclusions

Inclusion 1
Classification: Xerolic Camborthods, coarse-loamy, mixed, mesic
Positions on landscape: The lower inset fans
Distinctive present vegetation: Spiny hopsage, needlegrass, Wyoming big sagebrush

Inclusion 2
Classification: Xeric Torriorthents, loamy-skeletal, mixed, mesic
Positions on landscape: The lower areas adjacent to channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 3
Classification: Durixerolic Camborthods, coarse-loamy, mixed, mesic
Positions on landscape: The higher channel banks
Distinctive present vegetation: Basin wildrye, western wheatgrass, basin big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action, flooding
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Orovada soil—IIC, irrigated, and Vlc, nonirrigated
Range site: Orovada soil—02BB010N; Inclusion 1—02BB052N; Inclusion 2—02BB009N; Inclusion 3—024X006N

704—Orovada-McConnel association
Positions on landscape: Fan piedmonts, fan skirts

Composition
McConnel gravelly fine sandy loam, 2 to 4 percent slopes—35 percent
Contrasting inclusions:
Duric Camborthods, coarse-loamy, mixed, mesic, 0 to 2 percent slopes—6 percent
Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 4 percent slopes—5 percent
Fluvent Haploxerolls, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—4 percent

Characteristics of the Orovada Soil
Classification: Durixerolic Camborthods, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts, the lower inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 6,000 to 6,300 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the McConnel Soil**
Classification: Xerollic Camborthids, sandy-skeletal, mixed, mesic
Positions on landscape: Beach terraces, the higher inset fan remnants
Parent material: Alluvium that includes some loess and volcanic ash over lacustrine sediment
Slope: 2 to 4 percent
Elevation: 6,000 to 6,300 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

**Typical Profile**
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 6 to 12 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 12 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

**Soil and Water Features**
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid over very rapid

Available water capacity: 2.9 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—2;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

**Contrasting Inclusions**

**Inclusion 1**
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The lower margins of fan skirts
Distinctive present vegetation: Bud sagebrush, bottlebrush squirreltail, winterfat

**Inclusion 2**
Classification: Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Wyoming big sagebrush

**Inclusion 3**
Classification: Fluventic Haploxerolls, loamy-skeletal, mixed, mesic
Positions on landscape: Intermountain valley fans and drainageways
Distinctive present vegetation: Basin big sagebrush, rubber rabbitbrush

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Orovada Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**McConnel Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Orovada Soil**
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
McConnel Soil
Range seeding: Fair—too arid, droughty
Roadfill: Good
Topsoil: Poor—too sandy, small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Orovada soil—Ile, irrigated, and Vlc, nonirrigated; McConnel soil—IVe, irrigated, and Vlls, nonirrigated
Range site: Orovada soil—02B010N; McConnel soil—024X05N; Inclusion 1—024X04N; Inclusion 2—028B010N; Inclusion 3—028B003N

705—Orovada-Valmy association
Positions on landscape: Piedmont slopes

Composition
Major components:
Orovada fine sandy loam, 2 to 4 percent slopes—45 percent
Valmy very fine sandy loam, 0 to 2 percent slopes—40 percent
Contrasting inclusions:
Gund silt loam, 0 to 2 percent slopes—7 percent
Zineb gravelly loam, 0 to 4 percent slopes—5 percent
Haploxerolodic Durothroids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—3 percent

Characteristics of the Orovada Soil
Classification: Durixerolodic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirt remnants
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,700 to 5,900 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Text: Fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9 to 11 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Valmy Soil
Classification: Durothrophic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Inset fans, fan skirts
Parent material: Loess cap that is high in content of volcanic ash over mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,700 to 5,900 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Basin wildrye, black greasewood, basin big sagebrush

Typical Profile
Depth: 0 to 3 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 3 to 43 inches
Texture: Fine sandy loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 43 to 66 inches
Texture: Gravelly sand, very gravelly sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 46

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 5 to 7 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—4; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Aquic Durorthic Torriorthents, fine-silty over clayey, mixed, nonacid, mesic
Positions on landscape: Alluvial flats
Distinctive present vegetation: Basin big sagebrush, black greasewood

Inclusion 2
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Narrow, higher inset fans
Distinctive present vegetation: Indian ricegrass, Wyoming big sagebrush

Inclusion 3
Classification: Haploxerollic Durorthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants

Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Valmy Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Valmy Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Fair—small stones, thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Moderate—thin layer, seepage, piping
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Orovada soil—Ile, irrigated, and Vlc, nonirrigated; Valmy soil—IIs, irrigated, and Vllc, nonirrigated
Range site: Orovada soil—028B010N; Valmy soil—024X022N; Inclusion 1—024X006N; Inclusions 2 and 3—028B010N

740—Playas
Positions on landscape: Basin floors

Composition
Major component:
Playas—100 percent
Characteristics of the Playas

Positions on landscape: Depressions and sink areas on basin floors.
Parent material: Lacustrine sediment veneered by fine-textured sediment.
Frequency of flooding: Frequent for brief to long periods in September through July.
Runoff: Ponded.
Hydrologic group: D.

Interpretive Groups

Land capability classification: VIIIw, nonirrigated.
Range site: None.

751—Poorkal-Lopwash association

Positions on landscape: Inset fans.

Composition

Major components:
Poorkal loam, 0 to 4 percent slopes—55 percent.
Lopwash loam, 0 to 4 percent slopes—40 percent.

Contrasting inclusions:
Bubus loam, 0 to 4 percent slopes—2 percent.
Durixerollic Haplorthods, fine-loamy, mixed, frigid, 0 to 4 percent slopes—2 percent.
Shipley fine sandy loam, occasionally flooded, 0 to 4 percent slopes—1 percent.

Characteristics of the Poorkal Soil

Classification: Durixerollic Calciphilothods, coarse-loamy, mixed, frigid.
Positions on landscape: Broad inset fans.
Parent material: Alluvium that is derived from sedimentary rock and includes loess and volcanic ash.
Slope: 0 to 4 percent.
Elevation: 6,200 to 6,800 feet.
Average annual precipitation: About 10 inches.
Average annual air temperature: About 46 degrees F.
Frost-free season: About 100 days.
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, Wyoming big sagebrush.

Typical Profile

Rock fragments on surface: 5 percent pebbles.
Depth: 0 to 9 inches.
Texture: Loam.
Structure: Platy.
Consistence: Slightly hard, very friable.
Reaction: Moderately alkaline.
Salinity: 0 to 2 millimhos per centimeter.
Sodicity (SAR): 0 to 2.
Depth: 9 to 30 inches.

Texture: Loam, gravelly sandy loam.
Structure: Subangular blocky.
Consistence: Slightly hard, friable.
Reaction: Strongly alkaline.
Salinity: 0 to 2 millimhos per centimeter.
Sodicity (SAR): 0 to 2.
Depth: 30 to 62 inches.
Texture: Very gravelly loam.
Structure: Massive.
Consistence: Slightly hard, friable.
Reaction: Strongly alkaline.
Salinity: 0 to 2 millimhos per centimeter.
Sodicity (SAR): 0 to 2.

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches.
Frequency of flooding: None.
Permeability: Moderate.
Available water capacity: 4.5 to 6.0 inches.
Water-supplying capacity: 8 inches.
Runoff: Slow.
Hydrologic group: B.
Erosion factors (upper layer): K value—0.32; T value—5; wind erodibility group—4L.
Hazard of erosion: By water—slight; by wind—severe.
Shrink-swell potential: Low.
Corrosivity: To steel—high; to concrete—low.
Potential for frost action: Moderate.

Characteristics of the Lopwash Soil

Classification: Typic Camborthods, loamy-skeletal, mixed, frigid.
Positions on landscape: Narrow inset fans adjacent to channels.
Parent material: Alluvium derived from various kinds of rock and loess.
Slope: 0 to 4 percent.
Elevation: 6,200 to 6,800 feet.
Average annual precipitation: About 9 inches.
Average annual air temperature: About 46 degrees F.
Frost-free season: About 100 days.
Dominant present vegetation: Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush.

Typical Profile

Depth: 0 to 12 inches.
Texture: Loam.
Structure: Platy.
Consistence: Slightly hard, friable.
Reaction: Moderately alkaline.
Salinity: 2 to 4 millimhos per centimeter.
Sodicity (SAR): 0 to 5.
Depth: 12 to 60 inches.
Texture: Very gravelly sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.5 to 5.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.37; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Stream terraces
Distinctive present vegetation: Black greasewood

Inclusion 2
Classification: Durixerollic Haplorthods, fine-loamy, mixed, frigid
Positions on landscape: Nonburied fan piedmont remnants
Distinctive present vegetation: Needlegrass, bluegrass, Wyoming big sagebrush

Inclusion 3
Classification: Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid
Positions on landscape: Concave inset fans that are subject to run-on
Distinctive present vegetation: Bottlebrush squirreltail, winterfat

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Poorcal Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Lopwash Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Poorcal Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Lopwash Soil
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups

Land capability classification: Poorcal and Lopwash soils—IVe, irrigated, and VIIc, nonirrigated
Range site: Poorcal soil—028B010N; Lopwash soil—028B017N; Inclusion 1—024X003N; Inclusion 2—028B010N; Inclusion 3—028B013N

811—Ravenswood-Itca-Walti association
Positions on landscape: Mountains

Composition
Major components:
Ravenswood gravelly loam, 15 to 50 percent slopes, very stony—50 percent
Itca stony loam, 15 to 50 percent slopes—20 percent
Walti cobble loam, 8 to 15 percent slopes—15 percent
Contrasting inclusions:
Rock outcrop—8 percent
Robson very gravelly loam, 8 to 15 percent slopes—4 percent
Cleavage very gravelly fine sandy loam, 8 to 30 percent slopes—3 percent

Characteristics of the Ravenswood Soil
Classification: Typic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: North- and east-facing side slopes of mountains
**Parent material:** Colluvium and residuum derived from metavolcanic and volcanic rock

**Slope:** 15 to 50 percent

**Elevation:** 6,200 to 8,200 feet

**Average annual precipitation:** About 14 inches

**Average annual air temperature:** About 42 degrees F

**Frost-free season:** About 80 days

**Dominant present vegetation:** Idaho fescue, bluegrass, mountain big sagebrush, singleleaf pinyon

**Site index for singleleaf pinyon:** 55

---

### Typical Profile

**Rock fragments on surface:** 3 percent stones and boulders, 10 percent cobbles, 65 percent pebbles

**Depth:** 0 to 9 inches

**Texture:** Gravelly loam

**Structure:** Platy

**Consistency:** Slightly hard, very friable

**Reaction:** Neutral

**Depth:** 9 to 13 inches

**Texture:** Very gravelly clay loam

**Structure:** Angular blocky

**Consistency:** Slightly hard, friable

**Reaction:** Mildly alkaline

**Depth:** 13 to 36 inches

**Texture:** Very gravelly clay

**Structure:** Angular blocky

**Consistency:** Hard, firm

**Reaction:** Mildly alkaline

**Depth:** 36 inches

**Material:** Unweathered bedrock

---

### Soil and Water Features

**Depth to bedrock:** 30 to 40 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Slow

**Available water capacity:** 5 to 6 inches

**Water-supplying capacity:** 14 inches

**Runoff:** Rapid

**Hydrologic group:** C

**Erosion factors (upper layer):** K value—0.10; T value—1;
wind erodibility group—6

**Hazard of erosion:** By water—slight; by wind—slight

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—moderate; to concrete—low

**Potential for frost action:** Low

---

### Characteristics of the Wati Soil

**Classification:** Aridic Argixerolls, fine, montmorillonitic, frigid

**Positions on landscape:** Summits and shoulder slopes of mountains

**Parent material:** Colluvium and residuum derived from rhyolite, andesite, and tuff

**Slope:** 8 to 15 percent

**Elevation:** 6,800 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

Typical Profile
Rock fragments on surface: 10 percent cobbles, 10 percent pebbles
Depth: 0 to 4 inches
Texture: Cobble loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 4 to 10 inches
Texture: Clay loam, gravelly clay loam
Structure: Subangular blocky
Consistence: Hard, friable
Reaction: Neutral
Depth: 10 to 30 inches
Texture: Clay
Structure: Prismatic
Consistence: Very hard, firm
Reaction: Neutral
Depth: 30 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.7 to 4.7 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Distinctive present vegetation: Bluebunch wheatgrass, bluegrass, low sagebrush

Inclusion 3
Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Windswept crests and nose slopes of mountains
Distinctive present vegetation: Bluegrass, black sagebrush, low sagebrush

Major Current Uses
Livestock grazing, wildlife habitat, cordwood production

Suitability for Wildlife Habitat Elements

Ravenswood Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Itca Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Walti Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Ravenswood Soil
Range seeding: Poor—eroses easily
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Itca Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones, slope
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Walti Soil

Range seeding: Poor—rooting depth, large stones
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones
Daily cover for landfill: Poor—depth to rock, hard to pack
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Ravenswood and ltca soils—VIIe, nonirrigated; Walti soil—VIIIs, nonirrigated
Range site: Ravenswood and ltca soils—025X061N; Walti soil—024X027N; Inclusion 1—none; Inclusion 2—024X018N; Inclusion 3—024X016N

812—Ravenswood-Shagnastv-Walti association

Positions on landscape: Mountains

Composition

Major components:
Ravenswood gravelly loam, 15 to 30 percent slopes, extremely stony—40 percent
Shagnasty very cobbly loam, 15 to 30 percent slopes—25 percent
Walti very cobbly loam, 8 to 15 percent slopes—20 percent
Contrasting inclusions:
Welch loam, drained, 2 to 8 percent slopes—5 percent
Aridic Argixerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—5 percent
Rock outcrop—4 percent
Rubble land—1 percent

Characteristics of the Ravenswood Soil

Classification: Typic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex, south- and west-facing side slopes of mountains
Parent material: Colluvium and residuum derived from metavolcanic and volcanic rock
Slope: 15 to 30 percent
Elevation: 6,000 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 80 days

Dominant present vegetation: Idaho fescue, bluegrass, mountain big sagebrush, singleleaf pinyon
Site index for singleleaf pinyon: 55

Typical Profile

Rock fragments on surface: 10 percent stones and boulders, 35 percent pebbles
Depth: 0 to 9 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 9 to 13 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Depth: 13 to 36 inches
Texture: Very gravelly clay
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 36 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 30 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 5 to 6 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.20; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Shagnastv Soil

Classification: Typic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Concave, north- and east-facing side slopes of mountains
Parent material: Colluvium over residuum derived from rhyolite, andesite, or quartzite
Slope: 15 to 30 percent
Elevation: 6,000 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, singleleaf pinyon
Site index for singleleaf pinyon: 55

Typical Profile
Rock fragments on surface: 30 percent cobbles, 15 percent pebbles
Depth: 0 to 15 inches
Texture: Very cobbly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 15 to 36 inches
Texture: Clay, clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 36 to 57 inches
Texture: Cobble clay loam, cobbly silty clay loam
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline

Depth: 57 inches
Material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 50 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 7.2 to 8.5 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C

Erosion factors (upper layer): K value—0.15; T value—3;
wind erodibility group—8

Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Walti Soil
Classification: Aridic Argyixerolls, fine, montmorillonitic, frigid
Positions on landscape: Crests of mountains
Parent material: Colluvium and residuum derived from rhyolite, andesite, and tuff
Slope: 8 to 15 percent
Elevation: 6,800 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F

Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

Typical Profile
Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 4 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral

Depth: 4 to 10 inches
Texture: Clay loam, gravelly clay loam
Structure: Subangular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 10 to 30 inches
Texture: Clay
Structure: Prismatic
Consistence: Very hard, firm
Reaction: Neutral

Depth: 30 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.8 to 5.0 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D

Erosion factors (upper layer): K value—0.15; T value—2;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Narrow intermountain drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 2
Classification: Aridic Argixerolls, fine-loamy, mixed, frigid
Positions on landscape: Foot slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, mountain big sagebrush

Inclusion 3
Positions on landscape: Shoulder slopes and scattered peaks of mountains
Distinctive present vegetation: None

Inclusion 4
Positions on landscape: Below areas of Rock outcrop
Distinctive present vegetation: None

Major Uses
Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Cordwood production

Suitability for Wildlife Habitat Elements
Ravenswood Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Shagnasty Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Walti Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Ravenswood Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Moderate—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Shagnasty Soil
Range seeding: Poor—large stones
Roadfill: Poor—low strength, shrink-swell
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—too clayey, hard to pack, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Moderate—thin layer, hard to pack, large stones

Walti Soil
Range seeding: Poor—rooting depth, large stones
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones
Daily cover for landfill: Poor—depth to rock, hard to pack
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Ravenswood soil—Vls, nonirrigated; Shagnasty and Walti soils—Vlls, nonirrigated
Range site: Ravenswood and Shagnasty soils—025X061N; Walti soil—024X027N; Inclusion 1—028B024N; Inclusion 2—028B030N; Inclusion 3—none; Inclusion 4—none

850—Relley silt loam, 0 to 2 percent slopes
Positions on landscape: Piedmont slopes

Composition
Major component:
Relley silt loam, 0 to 2 percent slopes—85 percent
Contrasting inclusions:
Durothic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent
Batan silt loam, 0 to 2 percent slopes—4 percent
Bubus very fine sandy loam, 0 to 2 percent slopes—3 percent
Wholan very fine sandy loam, 0 to 2 percent slopes—3 percent

Characteristics of the Relley Soil
Classification: Duric Camborthids, fine-silty, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,100 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush
Typical Profile

Depth: 0 to 8 inches
Texture: Silt loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 16 inches
Texture: Silt loam
Structure: Prismatic
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 16 to 28 inches
Texture: Silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 28 to 60 inches
Texture: Silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 11 to 13 inches
Water-supplying capacity: 7 inches
Runoff: Slow

Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Inclusion 2

Classification: Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants
Distinctive present vegetation: Black greasewood, shadscale, bud sagebrush

Inclusion 3

Classification: Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants near channels
Distinctive present vegetation: Black greasewood, shadscale, bud sagebrush

Inclusion 4

Classification: Typic Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Indian ricegrass, winterfat, halogoton

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Range seeding: Poor—too arid
Roadfill: Fair—low strength, shrink-swell
Topsoil: Fair—thin layer
Daily cover for landfills: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Pond reservoir areas: Moderate—seepage
Embarkments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Relley soil—IIc, irrigated; VIic, nonirrigated
Range site: Relley soil—024X002N; Inclusion 1—024X002N; Inclusions 2, 3, and 4—024X003N

854—Relley silt loam, frequently flooded, 0 to 2 percent slopes
Positions on landscape: Piedmont slopes
Composition

Major component:
Relley silt loam, frequently flooded, 0 to 2 percent slopes—85 percent
Contrasting inclusions:
Durorthic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—9 percent
Duric Camborthids, fine-loamy, mixed, mesic, 0 to 2 percent slopes—4 percent
Creemon silt loam, 0 to 2 percent slopes—2 percent

Characteristics of the Relley Soil

Classification: Duric Camborthids, fine-silty, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,100 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, Indian ricegrass, sickle saltbush

Typical Profile

Depth: 0 to 8 inches
Texture: Silt loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 16 inches
Texture: Silt loam
Structure: Prismatic
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 16 to 28 inches
Texture: Silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 28 to 60 inches
Texture: Silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline

Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Frequent for very brief periods in December through June
Permeability: Moderate
Available water capacity: 11 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Durorthic Xeric Torriorthents, coarse-silty, mixed (calcnaveous), mesic
Positions on landscape: Active inset fans
Distinctive present vegetation: Wyoming big sagebrush, black sagebrush, basin big sagebrush

Inclusion 2
Classification: Duric Camborthids, fine-loamy, mixed, mesic
Positions on landscape: Fan aprons
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Inset fan remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Range seeding: Poor—too arid
Roadfill: Fair—low strength, shrink-swell
Topsoil: Fair—thin layer
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Pond reservoir areas: Moderate—seepage
**Embankments, dikes, and levees:** Severe—piping, excess salt
**Sand:** Improbable source—excess fines
**Gravel:** Improbable source—excess fines

**Interpretive Groups**

**Land capability classification:** Relley soil—IIIw, irrigated; VIIw, nonirrigated
**Range site:** Relley soil—024X012N; Inclusion 1—024X006N; Inclusions 2 and 3—024X002N

**910—Rutab loam, 0 to 2 percent slopes**

**Positions on landscape:** Piedmont slopes

**Composition**

**Major component:** Rutab loam, 0 to 2 percent slopes—90 percent

**Contrasting inclusions:** Fluventic Haploxerolls, loamy-skeletal, mixed, frigid, 0 to 4 percent slopes—5 percent

**Glyphs** fine sandy loam, 0 to 4 percent slopes—5 percent

**Characteristics of the Rutab Soil**

**Classification:** Xerollic Cambithods, loamy-skeletal, mixed, frigid

**Positions on landscape:** Fan skirts

**Parent material:** Mixed alluvium

**Slope:** 0 to 2 percent

**Elevation:** 6,300 to 7,500 feet

**Average annual precipitation:** About 9 inches

**Average annual air temperature:** About 46 degrees F

**Frost-free season:** About 100 days

**Dominant present vegetation:** Indian ricegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**

**Rock fragments on surface:** 5 percent pebbles

**Depth:** 0 to 8 inches

**Texture:** Loam

**Structure:** Platy

**Consistence:** Soft, very friable

**Reaction:** Neutral

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 8 to 21 inches

**Texture:** Gravelly loam

**Structure:** Massive

**Consistence:** Slightly hard, friable

**Reaction:** Mildly alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 21 to 60 inches

**Texture:** Extremely gravelly sandy loam

**Structure:** Single grain

**Consistence:** Loose

**Reaction:** Mildly alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Moderate

**Available water capacity:** 3.2 to 5.3 inches

**Water-supplying capacity:** 9 inches

**Runoff:** Medium

**Hydrologic group:** B

**Erosion factors (upper layer):** K value—0.32; T value—5; wind erodibility group—5

**Hazard of erosion:** By water—slight; by wind—slight

**Shrink-swell potential:** Low

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Moderate

**Contrasting Inclusions**

**Inclusion 1**

**Classification:** Fluventic Haploxerolls, loamy-skeletal, mixed, frigid

**Positions on landscape:** Inset fans

**Distinctive present vegetation:** Basin wildrye, basin big sagebrush

**Inclusion 2**

**Classification:** Durixerollic Haplorgids, fine-loamy, mixed, mesic

**Positions on landscape:** Fan piedmont remnants

**Distinctive present vegetation:** Bluegrass, needlegrass, Wyoming big sagebrush, small rabbitbrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Wild herbaceous plants (nonirrigated):** Fair

**Shrubs (nonirrigated):** Fair

**Suitability and Limitations for Selected Uses**

**Range seeding:** Fair—too arid

**Roadfill:** Good

**Topsoil:** Poor—small stones, area reclaim

**Daily cover for landfill:** Poor—seepage, small stones

**Shallow excavations:** Severe—cutbanks cave

**Local roads and streets:** Moderate—frost action

**Pond reservoir areas:** Severe—seepage

**Embankments, dikes, and levees:** Severe—seepage

**Sand:** Probable source

**Gravel:** Probable source

**Interpretive Groups**

**Land capability classification:** Rutab soil—III, irrigated: VIIc, nonirrigated
Range site: Rutab soil—028B010N; Inclusion 1—028B003N; Inclusion 2—028B010N

931—Shagnasty-Roca-Rock outcrop association

Positions on landscape: Mountains

**Composition**

Major components:
- Shagnasty very cobbly loam, 30 to 50 percent slopes—45 percent
- Roca very cobbly loam, 30 to 50 percent slopes—25 percent
- Rock outcrop—15 percent

Contrasting inclusions:
- Walti very cobbly loam, 8 to 30 percent slopes—8 percent
- Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid, 15 to 50 percent slopes—5 percent
- Welch loam, drained, 2 to 8 percent slopes—2 percent

**Characteristics of the Shagnasty Soil**

Classification: Typic Argixerolls, fine, montmorillonitic, frigid

Positions on landscape: Convex, north-, east-, and west-facing side slopes of mountains

Parent material: Colluvium and residuum derived from rhyolite, andesite, and quartzite

Slope: 30 to 50 percent

Elevation: 6,800 to 7,600 feet

Average annual precipitation: About 14 inches

Average annual air temperature: About 44 degrees F

Frost-free season: About 80 days

Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, singleleaf pinyon

Site index for singleleaf pinyon: 55

**Typical Profile**

Rock fragments on surface: 30 percent cobbles, 15 percent pebbles

- Depth: 0 to 15 inches
  - Texture: Very cobbly loam
  - Structure: Subangular blocky
  - Consistence: Slightly hard, very friable
  - Reaction: Neutral

- Depth: 15 to 36 inches
  - Texture: Clay, clay loam
  - Structure: Angular blocky
  - Consistence: Hard, friable
  - Reaction: Neutral

- Depth: 36 to 57 inches
  - Texture: Cobbly clay loam, cobbly silty clay loam
  - Structure: Angular blocky
  - Consistence: Hard, firm
  - Reaction: Mildly alkaline

Depth: 57 inches

Material: Weathered bedrock

**Soil and Water Features**

Depth to bedrock: 50 to 60 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Slow

Available water capacity: 7.0 to 8.5 inches

Water-supplying capacity: 14 inches

Runoff: Rapid

Hydrologic group: C

Erosion factors (upper layer): K value—0.15; T value—3; wind erodibility group—8

Hazard of erosion: By water—moderate; by wind—slight

Shrink-swell potential: High

Corrosivity: To steel—moderate; to concrete—low

Potential for frost action: Low

**Characteristics of the Roca Soil**

Classification: Xerolic Haplargids, clayey-skeletal, montmorillonitic, frigid

Positions on landscape: South-facing side slopes of mountains

Parent material: Residuum derived from shale and chert

Slope: 30 to 50 percent

Elevation: 6,800 to 7,500 feet

Average annual precipitation: About 10 inches

Average annual air temperature: About 45 degrees F

Frost-free season: About 100 days

Dominant present vegetation: Bluegrass, bluebunch wheatgrass, big sagebrush

**Typical Profile**

Rock fragments on surface: 30 percent cobbles, 20 percent pebbles

- Depth: 0 to 4 inches
  - Texture: Very cobbly loam
  - Structure: Subangular blocky
  - Consistence: Slightly hard, very friable
  - Reaction: Neutral

- Salinity: 0 to 2 millimhos per centimeter

- Depth: 4 to 24 inches
  - Texture: Very gravelly clay loam, very gravelly clay
  - Structure: Angular blocky
  - Consistence: Hard, firm
  - Reaction: Mildly alkaline

- Salinity: 0 to 2 millimhos per centimeter
Depth: 24 inches
Material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.6 to 3.4 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

**Characteristics of the Rock Outcrop**

Positions on landscape: Scattered peaks on mountains
Elevation: 7,200 to 7,700 feet

**Contrasting Inclusions**

**Inclusion 1**
Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Crests of mountains
Distinctive present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

**Inclusion 2**
Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Mountain ridge nose slopes
Distinctive present vegetation: Black sagebrush, low sagebrush, bluegrass

**Inclusion 3**
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Basin wildrye, willows, basin big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Shagnasty Soil**
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Roca Soil**
Wild herbaceous plants (nonirrigated): Fair

**Shrubs (nonirrigated):** Fair

**Suitability and Limitations for Selected Uses**

**Shagnasty Soil**
Range seeding: Poor—large stones
Roadfill: Poor—low strength, shrink-swell, slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—too clayey, hard to pack, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer, hard to pack, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Roca Soil**
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**

Land capability classification: Shagnasty and Roca soils—VIIls, nonirrigated; Rock outcrop—VIIIls, nonirrigated
Range site: Shagnasty soil—025X061N; Roca soil—024X028N; Rock outcrop—none; Inclusion 1—028B037N; Inclusion 2—028B038N; Inclusion 3—028B024N

**932—Shagnasty-Softscrabbable association**

Positions on landscape: Mountains

**Composition**

Major components:
Shagnasty very cobly loam, 30 to 50 percent slopes—50 percent
Softscrabbable very cobly fine sandy loam, 15 to 30 percent slopes—35 percent
Contrasting inclusions:
Walti extremely stony loam, 8 to 15 percent slopes—6 percent
Pachic Argixerolls, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—4 percent
Welch loam, drained, 2 to 8 percent slopes—4 percent
Welch loam, 2 to 8 percent slopes—1 percent

**Characteristics of the Shagasty Soil**

*Classification:* Typic Argixerolls, fine, montmorillonitic, frigid
*Positions on landscape:* Convex side slopes of mountains
*Parent material:* Colluvium over residuum derived from rhyolite, andesite, and quartzite
*Slope:* 30 to 50 percent
*Elevation:* 6,500 to 8,500 feet
*Average annual precipitation:* About 14 inches
*Average annual air temperature:* About 44 degrees F
*Frost-free season:* About 80 days
*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, singleleaf pinyon
*Site index for singleleaf pinyon:* 55

**Typical Profile**

*Rock fragments on surface:* 40 percent stones and boulders, 30 percent cobbles, 15 percent pebbles
*Depth:* 0 to 15 inches
*Texture:* Very cobbly loam
*Structure:* Subangular blocky
*Consistency:* Slightly hard, very friable
*Reaction:* Neutral
*Depth:* 15 to 36 inches
*Texture:* Clay, clay loam
*Structure:* Angular blocky
*Consistency:* Hard, friable
*Reaction:* Neutral
*Depth:* 36 to 57 inches
*Texture:* Cobbly clay loam, cobbly silty clay loam
*Structure:* Angular blocky
*Consistency:* Hard, firm
*Reaction:* Mildly alkaline
*Depth:* 57 inches
*Material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 50 to 60 inches
*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Slow
*Available water capacity:* 7.2 to 8.3 inches
*Water-supplying capacity:* 14 inches
*Runoff:* Rapid
*Hydrologic group:* C
*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8

**Hazard of erosion:** By water—moderate; by wind—slight
**Shrink-swell potential:** High
**Corrosivity:** To steel—moderate; to concrete—low
**Potential for frost action:** Low

**Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid
*Positions on landscape:* Concave, north-facing side slopes of mountains in areas where snow accumulates
*Parent material:* Colluvium and residuum derived from volcanic rock
*Slope:* 15 to 30 percent
*Elevation:* 6,500 to 8,200 feet
*Average annual precipitation:* About 16 inches
*Average annual air temperature:* About 44 degrees F
*Frost-free season:* About 70 days
*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

**Typical Profile**

*Depth:* 0 to 16 inches
*Texture:* Very cobbly fine sandy loam
*Structure:* Subangular blocky
*Consistency:* Slightly hard, very friable
*Reaction:* Neutral
*Depth:* 16 to 30 inches
*Texture:* Very cobbly clay loam
*Structure:* Angular blocky
*Consistency:* Hard, friable
*Reaction:* Neutral
*Depth:* 30 to 60 inches
*Texture:* Very gravelly clay loam
*Structure:* Angular blocky
*Consistency:* Hard, friable
*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Slow
*Available water capacity:* 6.0 to 7.8 inches
*Water-supplying capacity:* 14 inches
*Runoff:* Rapid
*Hydrologic group:* C
*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8

**Hazard of erosion:** By water—slight; by wind—slight
**Shrink-swell potential:** Low
**Corrosivity:** To steel—moderate; to concrete—low
**Potential for frost action:** Moderate
Contrasting Inclusions

Inclusion 1
Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Stable, convex side slopes of mountains
Distinctive present vegetation: Idaho fescue, needlegass, low sagebrush

Inclusion 2
Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Side slopes of mountains in small areas where snow accumulates
Distinctive present vegetation: Chokecherry

Inclusion 3
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Entrenched intermountain drainageways and canyon bottoms
Distinctive present vegetation: Basin wildrye, bluegrass, basin big sagebrush

Inclusion 4
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Smooth intermountain drainageways
Distinctive present vegetation: Tufted hairgrass, sedge, iris, willow

Major Uses
Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Cordwood production

Suitability for Wildlife Habitat Elements
Shagnasty Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Softscrable Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Shagnasty Soil
Range seeding: Poor—large stones
Roadfill: Poor—low strength, shrink-swell, slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—too clayey, hard to pack, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, slope, shrink-swell

Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer, hard to pack, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Softscrable Soil
Range seeding: Poor—large stones
Roadfill: Fair—large stones, slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Shagastny and Softscrable soils—VIIa, nonirrigated
Range site: Shagastny soil—025X061N; Softscrable soil—024X021N; Inclusion 1—024X027N; Inclusion 2—024X035N; Inclusion 3—028B024N; Inclusion 4—025X005N

942—Shipley silt loam, occasionally flooded, 0 to 2 percent slopes
Positions on landscape: Inset fans

Composition
Major component:
Shipley silt loam, occasionally flooded, 0 to 2 percent slopes—90 percent
Contrasting inclusions:
Shipley silt loam, gravelly substratum, gullied, 0 to 4 percent slopes—5 percent
Rutab gravelly sandy loam, 0 to 4 percent slopes—5 percent

Characteristics of the Shipley Soil
Classification: Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid
Positions on landscape: Inset fans
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 0 to 2 percent
Elevation: 6,400 to 6,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, winterfat
Typical Profile

Rock fragments on surface: 5 percent pebbles
Depth: 0 to 5 inches
Texture: Silt loam
Structure: Platy
Consistency: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 5 to 41 inches
Texture: Silt loam, very fine sandy loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25

Depth: 41 to 60 inches
Texture: Extremely gravelly sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Occasional for very brief periods in January through May
Permeability: Moderate
Available water capacity: 6.5 to 9.0 inches
Water-supplying capacity: 11 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—4;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid
Positions on landscape: Areas adjacent to recently entrenched channels
Distinctive present vegetation: Wyoming big sagebrush, basin wildrye

Inclusion 2
Classification: Xerollic Camborthids, loamy-skeletal, mixed, frigid

Positions on landscape: Inset fan remnants
Distinctive present vegetation: Indian ricegrass, Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses
Range seeding: Poor—excess salt, too arid, excess sodium
Roadfill: Good
Topsoil: Poor—area reclaim
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—flooding
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Shipley soil—Illw, irrigated; Illw, nonirrigated
Range site: Shipley soil—028B013N; Inclusion 1—028B009N; Inclusion 2—028B010N

950—Silverado sandy loam, 0 to 2 percent slopes

Positions on landscape: Inset fans

Composition

Major component:
Silverado sandy loam, 0 to 2 percent slopes—85 percent
Contrasting inclusions:
Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid, 0 to 2 percent slopes—6 percent
Xerollic Hapludands, fine-loamy, mixed, frigid, 0 to 2 percent slopes—5 percent
Typic Camborthids, loamy-skeletal, mixed, frigid, 0 to 2 percent slopes—4 percent

Characteristics of the Silverado Soil
Classification: Durixerollic Camborthids, coarse-loamy, mixed, frigid
Positions on landscape: Inset fans
Parent material: Inset fans
Slope: 0 to 2 percent
Elevation: 6,200 to 6,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**

Depth: 0 to 2 inches
Texture: Sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter

Depth: 2 to 19 inches
Texture: Sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter

Depth: 19 to 38 inches
Texture: Sandy loam, gravelly sandy loam
Structure: Massive
Consistency: Hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 38 to 60 inches
Texture: Very gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.0 to 5.5 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Positions on landscape:** Areas adjacent to narrow active channels
**Distinctive present vegetation:** Wyoming big sagebrush, spiny hopsage

**Inclusion 2**

Classification: Xerollic Hapludalfs, fine-loamy, mixed, frigid

Positions on landscape: Fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, needlegrass

**Inclusion 3**

Classification: Typic Camborthids, loamy-skeletal, mixed, frigid

Positions on landscape: Inset fans in the lower areas near fan skirts
Distinctive present vegetation: Shadscale, black greasewood, basin wildrye

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

**Interpretive Groups**

Land capability classification: Silverado soil—IVs, irrigated; VIIc, nonirrigated
Range site: Silverado soil—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—024X022N

**990—Sonoma-Wendane association**

Positions on landscape: Stream flood plains, alluvial flats

**Composition**

Major components:
Sonoma silt loam, drained, occasionally flooded, 0 to 2 percent slopes—65 percent
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—20 percent

Contrasting inclusions:
Xerolic Camborthids, loamy-skeletal, mixed, mesic, 0 to 2 percent slopes—5 percent
Durixerolic Camborthids, coarse-loamy, mixed, mesic, 0 to 4 percent slopes—5 percent
Paranit silt loam, 0 to 2 percent slopes—5 percent

**Characteristics of the Sonoma Soil**

**Classification:** Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic

**Positions on landscape:** Outer margins of flood plains

**Parent material:** Silty mixed alluvium that includes volcanic ash

**Slope:** 0 to 2 percent

**Elevation:** 5,700 to 5,800 feet

**Average annual precipitation:** About 7 inches

**Average annual air temperature:** About 50 degrees F

**Frost-free season:** About 110 days

**Dominant present vegetation:** Basin wildrye, alkali sacaton, basin big sagebrush, black greasewood

**Typical Profile**

**Depth:** 0 to 12 inches

**Texture:** Silt loam

**Structure:** Platy

**Consistency:** Slightly hard, very friable

**Reaction:** Moderately alkaline

**Salinity:** 4 to 8 millimhos per centimeter

**Sodicity (SAR):** 2 to 10

**Depth:** 12 to 60 inches

**Texture:** Silt loam, silty clay loam

**Structure:** Subangular blocky

**Consistency:** Slightly hard, very friable

**Reaction:** Strongly alkaline

**Salinity:** 2 to 8 millimhos per centimeter

**Sodicity (SAR):** 2 to 10

**Soil and Water Features**

**Depth to a seasonal high water table:** 42 to 60 inches

**Frequency of flooding:** Occasional for brief to long periods in March through June

**Permeability:** Moderately slow

**Available water capacity:** 11 to 13 inches

**Water-supplying capacity:** 9 inches

**Runoff:** Slow

**Hydrologic group:** C

**Erosion factors (upper layer):** K value—0.43; T value—5;
wind erodibility group—4L

**Hazard of erosion:** By water—slight; by wind—severe

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** High

---

**Characteristics of the Wendane Soil**

**Classification:** Aeric Halaquepts, fine-silty, mixed (calcareous), mesic

**Positions on landscape:** Alluvial flats

**Parent material:** Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash

**Slope:** 0 to 2 percent

**Elevation:** 5,700 to 5,800 feet

**Average annual precipitation:** About 7 inches

**Average annual air temperature:** About 49 degrees F

**Frost-free season:** About 120 days

**Dominant present vegetation:** Black greasewood, basin wildrye

**Typical Profile**

**Depth:** 0 to 7 inches

**Texture:** Silt loam

**Structure:** Platy

**Consistency:** Slightly hard, very friable

**Reaction:** Strongly alkaline

**Salinity:** 30 to 50 millimhos per centimeter

**Sodicity (SAR):** 13 to 25

**Depth:** 7 to 18 inches

**Texture:** Silt loam, very fine sandy loam

**Structure:** Subangular blocky

**Consistency:** Soft, very friable

**Reaction:** Strongly alkaline

**Salinity:** 16 to 30 millimhos per centimeter

**Sodicity (SAR):** 46 to 60

**Depth:** 18 to 60 inches

**Texture:** Stratified silt loam to clay loam

**Structure:** Massive

**Consistency:** Slightly hard, friable

**Reaction:** Strongly alkaline

**Salinity:** 16 to 30 millimhos per centimeter

**Sodicity (SAR):** 25 to 35

**Soil and Water Features**

**Depth to a seasonal high water table:** 35 to 48 inches

**Frequency of flooding:** Frequent for brief to long periods in February through June

**Permeability:** Moderately slow

**Available water capacity:** 11 to 13 inches

**Water-supplying capacity:** 7 inches

**Runoff:** Very slow

**Hydrologic group:** C

**Erosion factors (upper layer):** K value—0.55; T value—5;
wind erodibility group—4L

**Hazard of erosion:** By water—slight; by wind—severe

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—high; to concrete—high

**Potential for frost action:** High
Contrasting Inclusions

Inclusion 1
Classification: Xerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan skirt remnants
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 2
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts
Distinctive present vegetation: Wyoming big sagebrush, black greasewood

Inclusion 3
Classification: Fluvaquentic Haplaquolls, fine-silty, mixed (calcereous), mesic
Positions on landscape: Active flood plains adjacent to channels
Distinctive present vegetation: Saltgrass, alkali sacaton

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Sonoma Soil
Wild herbaceous plants (nonirrigated): Poor
 Shrubs (nonirrigated): Poor
 Wetland plants: Fair
 Shallow water areas: Fair

Wendane Soil
Wild herbaceous plants (nonirrigated): Very poor
 Shrubs (nonirrigated): Very poor
 Wetland plants: Poor
 Shallow water areas: Fair

Suitability and Limitations for Selected Uses

Sonoma Soil
Range seeding: Poor—excess salt
Roadfill: Poor—low strength
Topsoil: Fair—excess salt
Daily cover for landfill: Fair—too clayey
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, frost action
Pond reservoir areas: Slight
Embankments, dikes, and levees: Moderate—wetness, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Wendane Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium

Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Sonoma Soil
Drainage: Deep to water
Irrigation: Erodes easily, flooding, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Land capability classification: Sonoma soil—IIIw, irrigated, and VIw, nonirrigated; Wendane soil—VIIw, nonirrigated
Range site: Sonoma soil—024X006N; Wendane soil—024X007N; Inclusion 1—025X003N; Inclusion 2—024X022N; Inclusion 3—025X001N

998—Sonoma-Paranat association

Positions on landscape: Stream flood plains

Composition

Major components:
Sonoma silt loam, frequently flooded, 0 to 2 percent slopes—45 percent
Paranat silt loam, 0 to 2 percent slopes—20 percent
Sonoma silt loam, drained, occasionally flooded, 0 to 2 percent slopes—20 percent

Contrasting inclusions:
Duric Camborthids, fine-loamy, mixed, mesic, 0 to 2 percent slopes—6 percent
Durothidic Torriorthents, fine-loamy, mixed (calcereous), mesic, 0 to 2 percent slopes—4 percent
Duric Camborthids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—3 percent
Typic Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—2 percent

Characteristics of the Sonoma Soil, Frequently Flooded

Classification: Aeric Fluvaquents, fine-silty, mixed (calcereous), mesic
Positions on landscape: Smooth outer margins of broad flood plains
Parent material: Silty mixed alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Creeping wildrye, bluegrass, rush, sedge

Typical Profile
Depth: 0 to 12 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Depth: 12 to 60 inches
Texture: Silt loam, silty clay loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: 18 to 36 inches
Frequency of flooding: Frequent for brief to long periods in February through June
Permeability: Moderately slow
Available water capacity: 11 to 13 inches
Water-supplying capacity: 11 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.43; T value—5;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: High

Characteristics of the Paranat Soil
Classification: Fluvaquentic Halplaquolls, fine-silty, mixed (calcareous), mesic
Positions on landscape: Slightly concave flood plains
Parent material: Silty fluvial deposits
Slope: 0 to 2 percent
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Rush, sedge, creeping wildrye, bluegrass, basin wildrye

Typical Profile
Depth: 0 to 20 inches
Texture: Silt loam
Structure: Granular
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 20 to 48 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 48 to 60 inches
Texture: Stratified very fine sandy loam to silty clay
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: 18 to 42 inches
Frequency of flooding: Frequent for brief to long periods in December through June
Permeability: Moderately slow
Available water capacity: 11 to 13 inches
Water-supplying capacity: 12 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: High

Characteristics of the Sonoma Soil, Occasionally Flooded
Classification: Aeris Fluvaquents, fine-silty, mixed (calcflareous), mesic
Positions on landscape: Stream terraces
Parent material: Silty mixed alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Basin wildrye, inland saltgrass, basin big sagebrush, black greasewood

Typical Profile
Depth: 0 to 12 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 12 to 60 inches
Texture: Silt loam, silty clay loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

**Soil and Water Features**

*Depth to a seasonal high water table: 42 to 60 inches*
*Frequency of flooding: Occasional for brief to long periods in March through June*
*Permeability: Moderately slow*
*Available water capacity: 11 to 13 inches*
*Water-supplying capacity: 9 inches*
*Runoff: Very slow*
*Hydrologic group: C*
*Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L*
*Hazard of erosion: By water—slight; by wind—severe*
*Shrink-swell potential: Moderate*
*Corrosivity: To steel—high; to concrete—low*
*Potential for frost action: High*

**Contrasting Inclusions**

**Inclusion 1**
*Classification: Duric Camborthids, fine-loam, mixed, mesic*
*Positions on landscape: Stream terrace remnants*
*Distinctive present vegetation: Rubber rabbitbrush, basin wildrye, black greasewood*

**Inclusion 2**
*Classification: Durorthidic Torriorthents, fine-loamy, mixed (calcareous), mesic*
*Positions on landscape: Small fanettes adjacent to fan piedmont remnants*
*Distinctive present vegetation: Basin big sagebrush, basin wildrye, rubber rabbitbrush, bluegrass*

**Inclusion 3**
*Classification: Duric Camborthids, loamy-skeletal, mixed, mesic*
*Positions on landscape: Areas adjacent to channels on stream terraces*
*Distinctive present vegetation: Rubber rabbitbrush, black greasewood, basin wildrye*

**Inclusion 4**
*Classification: Typic Camborthids, coarse-silty, mixed, mesic*

*Positions on landscape: Fan skirts adjacent to fan piedmont remnants*
*Distinctive present vegetation: Black greasewood, basin wildrye, inland saltgrass*

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Sonoma Soil, Frequently Flooded**
*Wild herbaceous plants (nonirrigated): Poor*
*Shrubs (nonirrigated): Poor*
*Wetland plants: Good*
*Shallow water areas: Fair*

**Paranat Soil**
*Wild herbaceous plants (nonirrigated): Fair*
*Shrubs (nonirrigated): Fair*
*Wetland plants: Good*
*Shallow water areas: Good*

**Sonoma Soil, Occasionally Flooded**
*Wild herbaceous plants (nonirrigated): Poor*
*Shrubs (nonirrigated): Poor*
*Wetland plants: Fair*
*Shallow water areas: Fair*

**Suitability and Limitations for Selected Uses**

**Sonoma Soil, Frequently Flooded**
*Range seeding: Poor—excess salt*
*Roadfill: Poor—low strength*
*Topsoil: Fair—excess salt*
*Daily cover for landfill: Fair—too clayey, wetness*
*Local roads and streets: Severe—low strength, frost action, flooding*
*Pond reservoir areas: Slight*
*Embankments, dikes, and levees: Severe—wetness*
*Sand: Improbable source—excess fines*
*Gravel: Improbable source—excess fines*

**Paranat Soil**
*Range seeding: Fair—excess salts*
*Roadfill: Poor—low strength*
*Topsoil: Good*
*Daily cover for landfill: Fair—too clayey, wetness*
*Shallow excavations: Severe—wetness*
*Local roads and streets: Severe—low strength, frost action, flooding*
*Pond reservoir areas: Slight*
*Embankments, dikes, and levees: Severe—piping, wetness*
*Sand: Improbable source—excess fines*
*Gravel: Improbable source—excess fines*

**Sonoma Soil, Occasionally Flooded**
*Range seeding: Poor—excess salt*
*Roadfill: Poor—low strength*
Topsoil: Fair—excess salt
Daily cover for landfill: Fair—too clayey
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, frost action, flooding
Pond reservoir areas: Slight
Embankments, dikes, and levees: Moderate—wetness, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Sonoma Soil, Frequently Flooded
Drainage: Frost action, flooding
Irrigation: Wetness, erodes easily
Terraces and diversions: Wetness, erodes easily

Paranat Soil
Drainage: Flooding, frost action
Irrigation: Wetness, erodes easily, flooding
Terraces and diversions: Erodes easily, wetness

Sonoma Soil, Occasionally Flooded
Drainage: Deep to water
Irrigation: Erodes easily, flooding, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Land capability classification: Sonoma, frequently flooded; Paranat; and Sonoma, occasionally flooded, soils—IIw, irrigated, and VIw, nonirrigated
Range site: Sonoma, frequently flooded, and Paranat soils—025X001N; Sonoma soil, occasionally flooded—024X006N; Inclusion 1—024X007N; Inclusion 2—028B003N; Inclusion 3—024X007N; Inclusion 4—024X015N

999—Sonoma-Wendane-Paranat association

Positions on landscape: Stream flood plains, alluvial flats

Composition

Major components:
Sonoma silt loam, drained, occasionally flooded, 0 to 2 percent slopes—45 percent
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—25 percent
Paranat silt loam, 0 to 2 percent slopes—15 percent
Contrasting inclusions:
Fluvaquentic Haplauquolls, fine-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—8 percent
Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic, 0 to 4 percent slopes—5 percent
Duroorthid Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—2 percent

Characteristics of the Sonoma Soil

Classification: Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Outer margins of flood plains
Parent material: Mixed silty alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Basin wildrye, basin big sagebrush, black greasewood

Typical Profile

Depth: 0 to 12 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Depth: 12 to 60 inches
Texture: Silt loam, silty clay loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features

Depth to a seasonal high water table: 42 to 60 inches
Frequency of flooding: Occasional for brief to long periods in March through June
Permeability: Moderately slow
Available water capacity: 11 to 13 inches
Water-supplying capacity: 9 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: High

Characteristics of the Wendane Soil

Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flats
Parent material: Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, basin wildrye

**Typical Profile**

Depth: 0 to 7 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 30 to 50 millimhos per centimeter
Sodicity (SAR): 13 to 25

Depth: 7 to 18 inches
Texture: Silt loam, very fine sandy loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Depth: 18 to 60 inches
Texture: Stratified silt loam to clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 46

**Soil and Water Features**

Depth to a seasonal high water table: 30 to 48 inches
Frequency of flooding: Frequent for brief to long periods in February through June
Permeability: Moderately slow
Available water capacity: 11 to 13 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

**Characteristics of the Paranat Soil**

Classification: Fluvaquentic Haplauquolls, fine-silty, mixed (calcareous), mesic
Positions on landscape: Active flood plains near channels
Parent material: Silty fluvial deposits
Slope: 0 to 2 percent

Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Rush, sedge, creeping wildrye, basin wildrye, bluegrass, willow

**Typical Profile**

Depth: 0 to 20 inches
Texture: Silt loam
Structure: Granular
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 20 to 48 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 48 to 60 inches
Texture: Stratified very fine sandy loam to silty clay
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

**Soil and Water Features**

Depth to a seasonal high water table: 18 to 42 inches
Frequency of flooding: Frequent for brief to long periods in December through June
Permeability: Moderately slow
Available water capacity: 11 to 13 inches
Water-supplying capacity: 12 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: High

**Contrasting Inclusions**

**Inclusion 1**

Classification: Fluvaquentic Haplauquolls, fine-loamy, mixed (calcareous), mesic
Positions on landscape: Inactive, partially backfilled channels
Distinctive present vegetation: Rush, sedge, inland saltgrass, basin wildrye
Inclusion 2
Classification: Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic
Positions on landscape: Fanettes adjacent to fan piedmont remnants
Distinctive present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye

Inclusion 3
Classification: Durothidic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Stream terraces
Distinctive present vegetation: Black greasewood

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Sonoma Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor
Wetland plants: Fair
Shallow water areas: Fair

Wendane Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Poor
Shallow water areas: Fair

Paranat Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Wetland plants: Good
Shallow water areas: Good

Suitability and Limitations for Selected Uses

Sonoma Soil
Range seeding: Poor—excess salt
Roadfill: Poor—low strength
Topsoil: Fair—excess salt
Daily cover for landfill: Fair—too clayey
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—frost action, flooding
Pond reservoir areas: Moderate—seepage

Paranat Soil
Range seeding: Fair—excess salt
Roadfill: Poor—low strength
Topsoil: Good

Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, frost action, flooding
Pond reservoir areas: Slight

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Sonoma Soil
Drainage: Frost action, flooding
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

Paranat Soil
Drainage: Flooding, frost action
Irrigation: Wetness, erodes easily, flooding
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Land capability classification: Sonoma soil—Illw, irrigated, and Vlw, nonirrigated; Wendane soil—VIIw, nonirrigated; Paranat soil—Illw, irrigated, and Vlw, nonirrigated

Range site: Sonoma soil—024X006N; Wendane soil—024X007N; Paranat soil—025X001N; Inclusion 1—025X001N; Inclusion 2—028B003N; Inclusion 3—024X011N

1011—Stampede-Handy-Caniwe association

Positions on landscape: Fan piedmonts, mountain valley fans

Composition

Major components:
Stampede gravelly loam, 4 to 8 percent slopes—50 percent
Handy gravelly loam, 8 to 15 percent slopes—30 percent
Caniwe very fine sandy loam, 2 to 4 percent slopes—10 percent
Contrasting inclusions:
Buffaran gravelly loam, 4 to 15 percent slopes—7 percent
Pachic Haploxerolls, fine-loamy, mixed, frigid, 0 to 2 percent slopes—3 percent

Characteristics of the Stampede Soil
Classification: Aridic Durixerolls, fine, montmorillonitic, frigid
Positions on landscape: Summits of fan piedmont remnants and mountain valley fan remnants
Parent material: Alluvium and colluvium derived from various kinds of rock
Slope: 4 to 8 percent
Elevation: 5,500 to 7,100 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, mountain big sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline

Depth: 4 to 30 inches
Texture: Clay, gravelly clay
Structure: Prismatic
Consistence: Very hard, very firm
Reaction: Moderately alkaline

Depth: 30 to 60 inches
Texture: Stratified gravelly loam to very gravelly loamy sand
Structure: Massive
Consistence: Hard, firm
Reaction: Moderately alkaline

Soil and Water Features
Depth to the hardpan: 20 to 36 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 5.7 to 7.4 inches
Water-supplying capacity: 11 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.20; T value—5;
wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Handy Soil
Classification: Xerollic Haplargids, fine, montmorillonitic, frigid
Positions on landscape: Side slopes of fan piedmont remnants and mountain valley fan remnants
Parent material: Mixed alluvium
Slope: 8 to 15 percent
Elevation: 5,500 to 7,100 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needlegrass, western wheatgrass, big sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Soft, friable
Reaction: Neutral

Depth: 10 to 31 inches
Texture: Clay
Structure: Prismatic
Consistence: Very hard, very firm
Reaction: Neutral

Depth: 31 to 60 inches
Material: Indurated hardpan

Soil and Water Features
Depth to the hardpan: 20 to 36 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 3.4 to 5.3 inches
Water-supplying capacity: 11 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.43; T value—2;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Caniwe Soil
Classification: Aridic Durixerolls, fine-silty, mixed, mesic
Landers County, Nevada, South Part

**Positions on landscape:** Inset fans
**Parent material:** Loess, mixed alluvium
**Slope:** 2 to 4 percent
**Elevation:** 5,800 to 6,800 feet
**Average annual precipitation:** About 11 inches
**Average annual air temperature:** About 45 degrees F
**Frost-free season:** About 100 days
**Dominant present vegetation:** Bluebunch wheatgrass, needlegrass, bluegrass, Wyoming big sagebrush

**Typical Profile**

**Depth:** 0 to 17 inches
**Texture:** Very fine sandy loam
**Structure:** Platy
**Consistency:** Soft, very friable
**Reaction:** Neutral

**Depth:** 17 to 60 inches
**Texture:** Stratified silt loam to silty clay loam
**Structure:** Subangular blocky
**Consistency:** Hard, very friable
**Reaction:** Mildly alkaline

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches
**Frequency of flooding:** None
**Permeability:** Moderately slow
**Available water capacity:** 10 to 12 inches
**Water-supplying capacity:** 11 inches
**Runoff:** Slow
**Hydrologic group:** B
**Erosion factors (upper layer):** K value—0.49; T value—5; wind erodibility group—3
**Hazard of erosion:** By water—slight; by wind—severe
**Shrink-swell potential:** Moderate
**Corrosivity:** To steel—high; to concrete—low
**Potential for frost action:** Moderate

**Contrasting Inclusions**

**Inclusion 1**
**Classification:** Xerolic Durargids, clayey, montmorillonitic, mesic, shallow
**Positions on landscape:** The lower parts of summits and shoulder slopes of fan remnants
**Distinctive present vegetation:** Indian ricegrass, bluegrass, Wyoming big sagebrush

**Inclusion 2**
**Classification:** Pachic Apluxerolls, fine-loamy, mixed, frigid
**Positions on landscape:** Along stream and channel banks
**Distinctive present vegetation:** Basin big sagebrush, basin wildrye, bluegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Stampede Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Handy Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Caniwe Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Stampede Soil**
Range seeding: Fair—droughty
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Moderate—cemented pan, slope
Embankments, dikes, and levees: Moderate—thin layer, hard to pack
**Sand:** Improbable source—excess fines
**Gravel:** Improbable source—excess fines

**Handy Soil**
Range seeding: Poor—rooting depth
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
**Sand:** Improbable source—excess fines
**Gravel:** Improbable source—excess fines

**Caniwe Soil**
Range seeding: Good
Roadfill: Poor—low strength
Topsoil: Fair—too clayey
Daily cover for landfill: Fair—too clayey
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Severe—piping
**Sand:** Improbable source—excess fines
**Gravel:** Improbable source—excess fines
Interpretive Groups

Land capability classification: Stampede soil—IVe, irrigated, and Vlc, nonirrigated; Handy soil—VIIe, nonirrigated; Caniwe soil—Ile, irrigated, and Vlc, nonirrigated

Range site: Stampede soil—025X014N; Handy and Caniwe soils—028B007N; Inclusion 1—028B010N; Inclusion 2—028B003N

1041—Tenabo-Orovada-Buffaran association

Positions on landscape: Fan piedmonts

Composition

Major components:
Tenabo gravelly very fine sandy loam, 4 to 8 percent slopes—50 percent
Orovada fine sandy loam, 2 to 4 percent slopes—20 percent
Buffaran gravelly loam, 4 to 8 percent slopes—15 percent

Contrasting inclusions:
Typic Torriorthents, fine-loamy, mixed, mesic, 8 to 30 percent slopes—8 percent
Broyles fine sandy loam, 2 to 4 percent slopes—4 percent
Typic Torriorthents, fine-loamy, mixed, mesic, 8 to 15 percent slopes—3 percent

Characteristics of the Tenabo Soil

Classification: Typic Nadurargids, loamy, mixed, mesic, shallow

Positions on landscape: The lower summits of fan piedmont remnants

Parent material: Thin loess mantle that is high in content of volcanic ash over mixed alluvium

Slope: 4 to 8 percent
Elevation: 5,600 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile

Rock fragments on surface: 30 percent pebbles

Depth: 0 to 4 inches
Texture: Gravelly very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 4 to 15 inches

Texture: Clay loam, gravelly clay loam, silty clay loam
Structure: Prismatic
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 15 to 28 inches
Material: Indurated hardpan
Structure: Platy
Consistency: Extremely hard, extremely firm
Depth: 28 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features

Depth to the hardpan: 9 to 20 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.5 to 2.9 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Orovada Soil

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic

Positions on landscape: Inset fans
Parent material: Loess that is high in content of volcanic ash over mixed alluvium

Slope: 2 to 4 percent
Elevation: 5,600 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 8 to 26 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 26 to 61 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9 to 11 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Buffaran Soil

Classification: Xerollic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: The higher summits of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 8 percent
Elevation: 5,600 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Thurbert needlegrass, bottlebrush squirreltail, Indian ricegrass, big sagebrush

Typical Profile

Rock fragments on surface: 15 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam

Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 5 to 16 inches
Texture: Clay, gravelly clay, gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 16 to 27 inches
Material: Indurated hardpan
Structure: Massive
Consistence: Extremely hard, extremely firm
Depth: 27 to 60 inches
Material: Cemented hardpan
Structure: Platy
Consistence: Very hard, very firm

Soil and Water Features

Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Typic Torriorthents, fine-loamy, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The lower inset fans near scarp breaks
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Classification: Typic Torriorthents, fine-loamy, mixed, mesic
Positions on landscape: Fan toe slopes, scarp breaks
Distinctive present vegetation: Big sagebrush, black greasewood

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Tenabo Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Orovada Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Buffaran Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Tenabo Soil**
Range seeding: Poor—droughty, excess sodium
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones, too sandy
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embarkments, dikes, and levees: Severe—seepage, excess sodium, excess salt
Sand: Probable source
Gravel: Probable source

**Orovada Soil**
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embarkments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Buffaran Soil**
Range seeding: Poor—droughty, rooting depth
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—cemented pan, too clayey, small stones
Daily cover for landfill: Poor—cemented pan, hard to pack

Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, shrink-swell, low strength
Pond reservoir areas: Severe—cemented pan
Embarkments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**
Land capability classification: Tenabo soil—IVe, irrigated, and VIIa, nonirrigated; Orovada soil—Ile, irrigated, and VIc, nonirrigated; Buffaran soil—VIIa, nonirrigated
Range site: Tenabo soil—024X002N; Orovada and Buffaran soils—028B010N; Inclusions 1 and 2—024X002N; Inclusion 3—024X022N

**1042—Tenabo-Ricert-Desatoya association**
Positions on landscape: Fan piedmonts

**Composition**

Major components:
Tenabo gravely very fine sandy loam, 4 to 8 percent slopes—45 percent
Ricert very gravely very fine sandy loam, 2 to 4 percent slopes—25 percent
Desatoya gravelly fine sandy loam, 8 to 15 percent slopes—15 percent

Contrasting inclusions:
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—7 percent
Haploxerollic Durargids, loamy, mixed, mesic, shallow, 4 to 8 percent slopes—4 percent
Allor gravelly loam, 2 to 4 percent slopes—4 percent

**Characteristics of the Tenabo Soil**
Classification: Typic Nadurargids, loamy, mixed, mesic, shallow
Positions on landscape: The higher summits and shoulder slopes of fan piedmont remnants
Parent material: Thin loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 4 to 8 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

**Typical Profile**
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 4 to 15 inches
Texture: Clay loam, gravelly clay loam, silty clay loam
Structure: Prismatic
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 15 to 28 inches
Material: Indurated hardpan
Structure: Platy
Consistency: Extremely hard, extremely firm
Depth: 28 to 60
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to the hardpan: 9 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.5 to 2.9 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Ricert Soil
Classification: Duric Natrargids, fine-loamy, mixed, mesic
Positions on landscape: The lower summits and shoulder slopes of fan piedmont remnants
Parent material: Thin loess deposits over mixed alluvium
Slope: 2 to 4 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile
Depth: 0 to 6 inches
Texture: Very gravelly very fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 6 to 18 inches
Texture: Loam, clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 18 to 60 inches
Texture: Very gravelly sandy loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5;
wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Desatoya Soil
Classification: Durixerolic Haplargids, clayey over loamy-skeletal, montmorillonitic, mesic
Positions on landscape: North-facing side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 8 to 15 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
**Dominant present vegetation:** Bluegrass, needlegrass, Indian ricegrass, black sagebrush

**Typical Profile**

- **Depth:** 0 to 6 inches
- **Texture:** Gravelly fine sandy loam
- **Structure:** Platy
- **Consistency:** Slightly hard, very friable
- **Reaction:** Mildly alkaline
- **Salinity:** 0 to 2 millimhos per centimeter
- **Sodicity (SAR):** 0 to 2
- **Depth:** 6 to 13 inches
- **Texture:** Gravelly clay, gravelly clay loam
- **Structure:** Prismatic
- **Consistency:** Hard, friable
- **Reaction:** Mildly alkaline
- **Salinity:** 0 to 2 millimhos per centimeter
- **Sodicity (SAR):** 0 to 2
- **Depth:** 13 to 60 inches
- **Texture:** Stratified extremely gravelly sandy loam to very gravelly loamy sand
- **Structure:** Massive
- **Consistency:** Hard, firm
- **Reaction:** Strongly alkaline
- **Salinity:** 2 to 8 millimhos per centimeter
- **Sodicity (SAR):** 2 to 10

**Soil and Water Features**

- **Depth to a seasonal high water table:** More than 60 inches
- **Frequency of flooding:** None
- **Permeability:** Slow
- **Available water capacity:** 3.0 to 5.4 inches
- **Water-supplying capacity:** 8 inches
- **Runoff:** Medium
- **Hydrologic group:** C
- **Erosion factors (upper layer):** K value—0.20; T value—5; wind erodibility group—4
- **Hazard of erosion:** By water—slight; by wind—slight
- **Shrink-swell potential:** High
- **Corrosivity:** To steel—high; to concrete—low
- **Potential for frost action:** Moderate

**Contrasting Inclusions**

**Inclusion 1**
- **Classification:** Xerolic Camborthids, loamy-skeletal, mixed, mesic
- **Positions on landscape:** Inset fans
- **Distinctive present vegetation:** Bluegrass, Wyoming big sagebrush

**Inclusion 2**
- **Classification:** Haploxerolic Durargids, loamy, mixed, mesic, shallow

**Positions on landscape:** Summits on the upper part of fan piedmont remnants

**Distinctive present vegetation:** Wyoming big sagebrush, spiny hopsage

**Inclusion 3**
- **Classification:** Durixerollic Haplargids, fine-loamy, mixed, mesic
- **Positions on landscape:** Adjacent fan aprons
- **Distinctive present vegetation:** Wyoming big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Tenabo Soil**
- **Wild herbaceous plants (nonirrigated):** Very poor
- **Shrubs (nonirrigated):** Very poor

**Ricert Soil**
- **Wild herbaceous plants (nonirrigated):** Very poor
- **Shrubs (nonirrigated):** Very poor

**Desatoya Soil**
- **Wild herbaceous plants (nonirrigated):** Fair
- **Shrubs (nonirrigated):** Fair

**Suitability and Limitations for Selected Uses**

**Tenabo Soil**
- **Range seeding:** Poor—droughty, excess sodium
- **Roadfill:** Poor—cemented pan
- **Topsoil:** Poor—cemented pan, small stones, too sandy
- **Daily cover for landfill:** Poor—cemented pan, seepage, too sandy
- **Shallow excavations:** Severe—cemented pan, cutbanks cave
- **Local roads and streets:** Severe—cemented pan
- **Pond reservoir areas:** Severe—seepage, cemented pan
- **Embankments, dikes, and levees:** Severe—seepage, excess sodium, excess salt
- **Sand:** Probable source
- **Gravel:** Probable source

**Ricert Soil**
- **Range seeding:** Poor—excess salt, excess sodium
- **Roadfill:** Good
- **Topsoil:** Poor—small stones, area reclaim, excess sodium
- **Daily cover for landfill:** Poor—seepage, small stones
- **Shallow excavations:** Severe—cutbanks cave
- **Local roads and streets:** Slight
- **Pond reservoir areas:** Severe—seepage
- **Embankments, dikes, and levees:** Severe—seepage, excess sodium
- **Sand:** Probable source
- **Gravel:** Probable source
Desatoya Soil
Range seeding: Poor—rooting depth
Roadfill: Fair—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfills: Poor—small stones
Shallow excavations: Moderate—large stones, slope
Local roads and streets: Moderate—slope, frost action, large stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Tenabo soil—IVe, irrigated, and VII, nonirrigated; Ricert soil—IVs, irrigated, and VII, nonirrigated; Desatoya soil—VII, nonirrigated
Range site: Tenabo and Ricert soils—024X002N; Desatoya soil—024X030N; Inclusion 1—024X005N; Inclusion 2—024X020N; Inclusion 3—024X005N

1092—Tulase-Babus-McConnel association
Positions on landscape: Basin floors, fan skirts
Composition

Major components:
Tulase silt loam, 2 to 8 percent slopes—40 percent
Babus very fine sandy loam, slightly saline, 2 to 4 percent slopes—30 percent
McConnel loam, 0 to 4 percent slopes—15 percent
Contrasting inclusions:
Duric Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—5 percent
Xeric Torroirhtents, coarse-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent
Xerolitic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent

Characteristics of the Tulase Soil
Classification: Durorthic Xeric Torroirhtents, coarse-silty, mixed (calcareous), mesic
Positions on landscape: The higher fan skirts and lagoons
Parent material: Mixed silty alluvium that includes loess and volcanic ash
Slope: 2 to 8 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, Indian ricegrass, bluegrass, Wyoming big sagebrush

Typical Profile
Depth: 0 to 6 inches
Texture: Silt loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 60 inches
Texture: Very fine sandy loam, silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9 to 12 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Babus Soil
Classification: Durorthic Torroirhtents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Alluvial flats
Parent material: Mixed alluvium that is high in content of pyroclastic material
Slope: 2 to 4 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile
Depth: 0 to 6 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 6 to 60 inches
Texture: Stratified sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 16 to 25 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9 to 10 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the McConnel Soil
Classification: Xerolic Camborthids, sandy-skeletal, mixed, mesic
Positions on landscape: Offshore bars
Parent material: Alluvium that includes some loess and ash over lacustrine sediment
Slope: 0 to 4 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 6 to 12 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 12 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid over very rapid
Available water capacity: 3.0 to 6.4 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.37; T value—2;
wind erodibility group—5
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Inset fan remnants
Distinctive present vegetation: Black greasewood, shadscale

Inclusion 2
Classification: Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Xerolic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Offshore bars
Distinctive present vegetation: Wyoming big sagebrush

Major Uses
Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Irrigated cropland

Suitability for Wildlife Habitat Elements
Tulase Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Bubus Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
McConnel Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Tulase Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Good
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Bubus Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

McConnel Soil
Range seeding: Fair—too arid, droughty
Roadfill: Good
Topsoil: Poor—too sandy, small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

Restrictive Features for Selected Practices

Tulase Soil
Drainage: Deep to water
Irrigation: Erodes easily, slope
Terraces and diversions: Erodes easily

Bubus Soil
Drainage: Deep to water
Irrigation: Slope, erodes easily, excess salt
Terraces and diversions: Erodes easily

McConnel Soil
Drainage: Deep to water
Irrigation: Droughty
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Land capability classification: Tulase soil—I1le, irrigated, and V1c, nonirrigated; Bubus soil—I1c, irrigated, and V1c, nonirrigated; McConnel soil—I1Ve, irrigated, and V1s, nonirrigated

Range site: Tulase and McConnel soils—024X005N;
Bubus soil—024X002N; Inclusion I—024X003N;
Inclusions 2 and 3—024X005N

1131—Fortank gravelly loam, 4 to 8 percent slopes

Positions on landscape: Foothills

Composition

Major component:
Fortank gravelly loam, 4 to 8 percent slopes, extremely stony—85 percent

Contrasting inclusions:
Abruptic Xerolic Durargids, fine, montmorillonitic, mesic, 4 to 15 percent slopes—8 percent
Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 2 to 8 percent slopes—5 percent
Haploxerolic Durorthids, fine-loamy, mixed, mesic, 4 to 8 percent slopes—2 percent

Characteristics of the Fortank Soil

Classification: Xerolic Haplargids, fine, montmorillonitic, frigid

Positions on landscape: Side slopes of foothills
Parent material: Residuum derived from rhyolite, andesite, and quartzite
Slope: 4 to 8 percent
Elevation: 6,200 to 6,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Bluegrass, Indian ricegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 10 percent stones and boulders, 15 percent cobbles, 40 percent pebbles

Depth: 0 to 6 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Mildly alkaline

Depth: 6 to 30 inches
Texture: Gravelly clay, gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable  
Reaction: Moderately alkaline  
Depth: 30 inches  
Texture: Weathered bedrock  

**Soil and Water Features**  
Depth to bedrock: 30 to 40 inches  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Slow  
Available water capacity: 3 to 4 inches  
Water-supplying capacity: 9 inches  
Runoff: Medium  
Hydrologic group: C  
Erosion factors (upper layer): K value—0.15; T value—2; wind erosion index—8  
Hazard of erosion: By water—slight; by wind—slight  
Shrink-swell potential: High  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Moderate  

**Contrasting Inclusions**  

**Inclusion 1**  
Classification: Abruptic Xerollic Durargids, fine, montmorillonitic, mesic  
Positions on landscape: Concave fan piedmont remnants  
Distinctive present vegetation: Indian ricegrass, black sagebrush  

**Inclusion 2**  
Classification: Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic  
Positions on landscape: Inset fans between foothills  
Distinctive present vegetation: Indian ricegrass, Wyoming big sagebrush  

**Inclusion 3**  
Classification: Haploxerollc Durorthids, fine-loamy, mixed, mesic  
Positions on landscape: Convex fan piedmont remnants  
Distinctive present vegetation: Indian ricegrass, Wyoming big sagebrush  

**Major Current Uses**  
Livestock grazing, wildlife habitat  

**Suitability for Wildlife Habitat Elements**  
Wild herbaceous plants (nonirrigated): Fair  
Shrubs (nonirrigated): Fair  

**Suitability and Limitations for Selected Uses**  
Range seeding: Poor—rooting depth  
Roadfill: Poor—depth to rock, low strength, shrink-swell  
Topsoil: Poor—small stones  

Daily cover for landfill: Poor—depth to rock, small stones  
Shallow excavations: Moderate—depth to rock, too clayey  
Local roads and streets: Severe—low strength, shrink-swell  
Pond embankments, dikes, and levees: Moderate—thin layer, large stones  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines  

**Interpretive Groups**  
Land capability classification: Fortank soil—VIIa, nonirrigated  
Range site: Fortank soil—028B010N; Inclusion 1—028B011N; Inclusions 2 and 3—028B010N  

1140—Wendane silt loam, frequently flooded  
Positions on landscape: Alluvial flats  

**Composition**  
Major component: 
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—85 percent  

**Contrasting inclusions:**  
Aquic Durorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent  
Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—5 percent  
Typic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent  

**Characteristics of the Wendane Soil**  
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic  
Positions on landscape: Alluvial flats  
Parent material: Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash  
Slope: 0 to 2 percent  
Elevation: 5,200 to 6,000 feet  
Average annual precipitation: About 7 inches  
Average annual air temperature: About 49 degrees F  
Frost-free season: About 120 days  
Dominant present vegetation: Black greasewood, basin wildrye  

**Typical Profile**  
Depth: 0 to 7 inches  
Texture: Silt loam  
Structure: Platy  
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 3 to 50 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 7 to 18 inches
Texture: Silt loam, very fine sandy loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60
Depth: 18 to 60 inches
Texture: Stratified silt loam to clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 35

Soil and Water Features
Depth to a seasonal high water table: 30 to 48 inches
Frequency of flooding: Frequent for brief to long periods in February through June
Permeability: Moderately slow
Available water capacity: 11.0 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions
Inclusion 1
Classification: Aquic Durothric Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants near fan skirts
Distinctive present vegetation: Bottlebrush squirreltail, black greasewood, shadscale

Inclusion 2
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: The higher parts of alluvial flats
Distinctive present vegetation: Saltbush, black greasewood, inland saltgrass

Inclusion 3
Classification: Typic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants

Distinctive present vegetation: Basin wildrye, basin big sagebrush, black greasewood

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Fair
Shallow water areas: Poor

Suitability and Limitations for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improvable source—excess fines
Gravel: Improvable source—excess fines

Interpretive Groups
Land capability classification: Wendane soil—VIIw, nonirrigated
Range site: Wendane soil—024X007N; Inclusion 1—024X003N; Inclusion 2—024X011N; Inclusion 3—024X006N

1141—Wendane-Umberland association
Positions on landscape: Alluvial flats, lake plains

Composition
Major components:
Wendane silt loam, strongly sodic, 0 to 2 percent slopes—45 percent
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—25 percent
Umberland silt loam, rarely flooded, 0 to 2 percent slopes—20 percent
Contrasting inclusions:
Aquic Durothric Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent
Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—4 percent
Playas—1 percent
Characteristics of the Wendane Soil, Strongly Sodic

Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Convex alluvial flats
Parent material: Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,500 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Basin wildrye, silver buffaloberry, black greasewood

Typical Profile

Depth: 0 to 7 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Very strongly alkaline
Salinity: 30 to 60 millimhos per centimeter
Sodicity (SAR): 60 to 80

Depth: 7 to 18 inches
Texture: Silt loam, very fine sandy loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 40 millimhos per centimeter
Sodicity (SAR): 46 to 60

Depth: 18 to 60 inches
Texture: Stratified silt loam to clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 35

Soil and Water Features

Depth to a seasonal high water table: 30 to 48 inches
Frequency of flooding: Occasional for brief to long periods in February through June
Permeability: Moderately slow
Available water capacity: 11 to 13 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Wendane Soil, Frequently Flooded

Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Concave alluvial flats
Parent material: Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,500 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, basin wildrye

Typical Profile

Depth: 0 to 7 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Very strongly alkaline
Salinity: 30 to 50 millimhos per centimeter
Sodicity (SAR): 13 to 25

Depth: 7 to 18 inches
Texture: Silt loam, very fine sandy loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Depth: 18 to 60 inches
Texture: Stratified silt loam to clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 35

Soil and Water Features

Depth to a seasonal high water table: 30 to 48 inches
Frequency of flooding: Frequent for brief to long periods in February through June
Permeability: Moderately slow
Available water capacity: 11 to 13 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High
Characteristics of the Umbeland Soil

Classification: Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic
Positions on landscape: Lake plain terrace remnants
Parent material: Silty lacustrine sediment derived from various kinds of rock
Slope: 0 to 2 percent
Elevation: 5,500 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Iodinebush, rubber rabbitbrush, alkali sacaton, sickle saltbush

Typical Profile
Depth: 0 to 7 inches
Texture: Silt loam
Structure: Granular
Consistence: Slightly hard, friable
Reaction: Very strongly alkaline
Salinity: 25 to 40 millimhos per centimeter
Sodicity (SAR): 60 to 80
Depth: 7 to 60 inches
Texture: Clay, silty clay, silty clay loam
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Very strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: 30 to 60 inches
Frequency of flooding: Rare
Permeability: Very slow
Available water capacity: 9 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Inclusion 2
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flats adjacent to areas of Playas
Distinctive present vegetation: Black greasewood, inland saltgrass

Inclusion 3
Positions on landscape: Small, shallow depressions and sink areas
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Wendane Soil, Strongly Sodic
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Wendane Soil, Frequently Flooded
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Fair
Shallow water areas: Poor

Umbeland Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Poor
Shallow water areas: Poor

Suitability and Limitations for Selected Uses

Wendane Soil, Strongly Sodic
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Fair—wetness, shrink-swell
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Wendane Soil, Frequently Flooded
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Umberrand Soil
Range seeding: Poor—excess salt, excess sodium, too crusty
Roadfill: Poor—low strength, shrink-swell
Topsoil: Poor—excess salt, excess sodium, too clayey
Daily cover for landfill: Poor—too clayey, hard to pack, excess salt
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Pond reservoir areas: Slight
Embarkments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Umberrand Soil
Drainage: Percs slowly, frost action, excess salt
Irrigation: Wetness, perc slowly
Terraces and diversions: Erodes easily, wetness, perc slowly

Interpretive Groups
Land capability classification: Wendane and Umberrand soils—VIw, nonirrigated
Range site: Wendane soil, strongly sodic—028B057N;
Wendane soil, frequently flooded—024X007N;
Umberrand soil—024X010N; Inclusion 1—024X006N; Inclusion 2—024X011N; Inclusion 3—none

1142—Wendane-Gund association
Positions on landscape: Alluvial flats, lake plains

Composition

Major components:
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—45 percent
Gund silt loam, 0 to 2 percent slopes—30 percent
Gund silt loam, drained, 0 to 2 percent slopes—15 percent

Contrasting inclusions:
Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—6 percent
Umberrand silt loam, 0 to 2 percent slopes—4 percent

Characteristics of the Wendane Soil
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flats
Parent material: Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, basin wildrye

Typical Profile
Depth: 0 to 7 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 30 to 50 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 7 to 18 inches
Texture: Silt loam, very fine sandy loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60
Depth: 18 to 60 inches
Texture: Stratified silt loam to clay loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 35

Soil and Water Features
Depth to a seasonal high water table: 30 to 48 inches
Frequency of flooding: Frequent for brief to long periods in February through June
Permeability: Moderately slow
Available water capacity: 11 to 13 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High
**Characteristics of the Gund Soil**

*Classification:* Aquic Durothric Torriorthents, fine-silty over clayey, mixed, nonacid, mesic  
*Positions on landscape:* Lake plain terraces  
*Parent material:* Silty alluvium derived from loess and volcanic ash over lake sediment  
*Slope:* 0 to 2 percent  
*Elevation:* 5,600 to 5,800 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Basin wildrye, basin big sagebrush, black greasewood

**Typical Profile**

*Depth:* 0 to 4 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 10 to 25  
*Depth:* 4 to 23 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46  
*Depth:* 23 to 60 inches  
*Texture:* Silty clay, clay  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

**Soil and Water Features**

*Depth to a seasonal high water table:* 36 to 42 inches  
*Frequency of flooding:* Rare  
*Permeability:* Slow  
*Available water capacity:* 9 to 11 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

---

**Characteristics of the Gund Soil, Drained**

*Classification:* Aquic Durothric Torriorthents, fine-silty over clayey, mixed, nonacid, mesic  
*Positions on landscape:* Lake plain terrace remnants  
*Parent material:* Silty alluvium derived from loess and volcanic ash over lake sediment  
*Slope:* 0 to 2 percent  
*Elevation:* 5,600 to 5,800 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Black greasewood, basin wildrye

**Typical Profile**

*Depth:* 0 to 4 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 75 to 10 millimhos per centimeter  
*Sodicity (SAR):* 10 to 25  
*Depth:* 4 to 23 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistence:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 16 to 30 millimhos per centimeter  
*Sodicity (SAR):* 50 to 80  
*Depth:* 23 to 60 inches  
*Texture:* Silty clay, clay  
*Structure:* Massive  
*Consistence:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60

**Soil and Water Features**

*Depth to a seasonal high water table:* 60 to 72 inches  
*Frequency of flooding:* Rare  
*Permeability:* Slow  
*Available water capacity:* 9 to 11 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Very slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.49; T value—5; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—high  
*Potential for frost action:* High

---

**Contrasting Inclusions**

*Inclusion 1*  
*Classification:* Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flat margins
Distinctive present vegetation: Black greasewood, inland saltgrass

Inclusion 2
Classification: Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic
Positions on landscape: The lower margins of lake plain terrace remnants
Distinctive present vegetation: Iodinebush, alkali sacaton

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wendane Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Gund Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Very poor
Shallow water areas: Fair

Gund Soil, Drained
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses
Wendane Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Gund Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength, shrink-swell
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, hard to pack, excess salt
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Wendane and Gund soils—Vllw, nonirrigated
Range site: Wendane soil—024X007N; Gund soil—024X006N; Gund soil, drained—024X008N;
Inclusion 1—024X011N; Inclusion 2—024X010N

1143—Wendane silt loam, occasionally flooded
Positions on landscape: Basin floors

Composition
Major component:
Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—85 percent
Contrasting inclusions:
Aquic Durothic Torriorthents, fine-silty, mixed (calcereous), mesic, 0 to 2 percent slopes—5 percent
Sonoma silt loam, frequently flooded, strongly saline, 0 to 2 percent slopes—5 percent
Aeric Halaquepts, fine, montmorillonitic, mesic, 0 to 2 percent slopes—5 percent

Characteristics of the Wendane Soil
Classification: Aeric Halaquepts, fine-silty, mixed (calcereous), mesic
Positions on landscape: Alluvial flats
Parent material: Silty alluvium derived from volcanic rock, tuff, loess, volcanic ash
Slope: 0 to 2 percent
Elevation: 5,100 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, basin wildrye
Typical Profile

Depth: 0 to 7 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Very strongly alkaline
Salinity: 30 to 50 millimhos per centimeter
Sodicity (SAR): 13 to 25

Depth: 7 to 18 inches
Texture: Silt loam, very fine sandy loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Depth: 18 to 60 inches
Texture: Stratified silt loam to clay loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 35

Soil and Water Features

Depth to a seasonal high water table: 30 to 48 inches
Frequency of flooding: Occasional for brief to long periods in February through June
Permeability: Moderately slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C

Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Classification: Aquic Durorithic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Lake plain remnants
Distinctive present vegetation: Rubber rabbitbrush, black greasewood

Inclusion 2
Classification: Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Flood plains
Distinctive present vegetation: Basin wildrye, black greasewood

Inclusion 3
Classification: Aeric Halaquepts, fine, montmorillonitic, mesic
Positions on landscape: Alluvial flat remnants
Distinctive present vegetation: Black greasewood, basin wildrye

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Poor
Shallow water areas: Fair

Suitability and Limitations for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Wendane soil—VIIw, nonirrigated
Range site: Wendane soil—024X011N; Inclusions 1, 2, and 3—024X007N

1145—Wendane-Playas association
Positions on landscape: Basin floors

Composition

Major components:
Wendane silt loam, occasionally flooded, 0 to 2 percent slopes—70 percent
Playas—15 percent

Contrasting inclusions:
Aquic Durorithic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent
Wendane silt loam, frequently flooded, 0 to 2 percent slopes—5 percent
Isolde fine sand, 4 to 30 percent slopes—5 percent

Characteristics of the Wendane Soil
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flats
Parent material: Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash
Slope: 0 to 2 percent
Elevation: 5,100 to 6,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, basin wildrye

Typical Profile
Depth: 0 to 7 inches
Texture: Silt loam
Structure: Paly
Consistency: Slight hard, very friable
Reaction: Very strongly alkaline
Salinity: 30 to 50 millimhos per centimeter
Sodicity (SAR): 13 to 25

Depth: 7 to 18 inches
Texture: Silt loam, very fine sandy loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 46 to 60

Depth: 18 to 60 inches
Texture: Stratified silt loam to clay loam
Structure: Massive
Consistency: Slight hard, friable
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 25 to 35

Soil and Water Features
Depth to a seasonal high water table: 30 to 48 inches
Frequency of flooding: Occasional for brief to long periods in February through June
Permeability: Moderately slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Playas
Positions on landscape: Small, irregularly shaped sink areas

Parent material: Fine-textured sediment

Contrasting Inclusions

Inclusion 1
Classification: Aquic Durothric Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Inset fans on alluvial flats
Distinctive present vegetation: Iodinebush, alkali sacaton, inland saltgrass

Inclusion 2
Classification: Aerica Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: The lower parts of alluvial flats
Distinctive present vegetation: Alkali rabbitbrush, black greasewood, basin wildrye

Inclusion 3
Classification: Typic Torripsamment, mixed, mesic
Positions on landscape: Sand dunes
Distinctive present vegetation: Spiny hopsage, black greasewood, needlegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Wendane Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Wetland plants: Poor
Shallow water areas: Fair

Suitability and Limitations for Selected Uses

Wendane Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—flooding, frost action
Pond reservoir areas: Moderate—seepage
Embarkments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Wendane soil—VIIw, nonirrigated; Playas—VIIw, nonirrigated
Range site: Wendane soil—024X01N; Playas—none;
Inclusion 1—024X010N; Inclusion 2—024X007N;
Inclusion 3—027X016N
**1146—Wendane-Sonoma-Valmy association**

*Positions on landscape:* Alluvial flats, stream flood plains

**Composition**

*Major components:*
- Wendane silt loam, frequently flooded, 0 to 2 percent slopes—35 percent
- Sonoma silt loam, drained, occasionally flooded, 0 to 2 percent slopes—30 percent
- Valmy very fine sandy loam, 0 to 2 percent slopes—20 percent

*Contrasting inclusions:*
- Paranat silt loam, 0 to 2 percent slopes—6 percent
- Aeric Halaquepts, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—6 percent
- Durorthic Torriorthents, coarse-loamy, mixed (calcareous), mesic, 2 to 8 percent slopes—3 percent

** Characteristics of the Wendane Soil**

*Classification:* Aeric Halaquepts, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Alluvial flats

*Parent material:* Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,200 to 5,400 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Black greasewood, basin wildrye

**Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistency:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 30 to 50 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 7 to 18 inches

*Texture:* Silt loam, very fine sandy loam

*Structure:* Subangular blocky

*Consistency:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

*Depth:* 18 to 60 inches

*Texture:* Stratified silt loam to clay loam

*Structure:* Massive

*Consistency:* Slightly hard, friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 25 to 35

**Soil and Water Features**

*Depth to a seasonal high water table:* 30 to 48 inches

*Frequency of flooding:* Frequent for brief to long periods in February through June

*Permeability:* Moderately slow

*Available water capacity:* 11 to 13 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Very slow

*Hydrologic group:* C

*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—4L

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* High

**Characteristics of the Sonoma Soil**

*Classification:* Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic

*Positions on landscape:* Flood plains

*Parent material:* Mixed silt alluvium that includes volcanic ash

*Slope:* 0 to 2 percent

*Elevation:* 5,200 to 5,400 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 50 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Black greasewood, basin wildrye, basin big sagebrush

**Typical Profile**

*Depth:* 0 to 10 inches

*Texture:* Silt loam

*Structure:* Platy

*Consistency:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 10 to 60 inches

*Texture:* Silt loam, silty clay loam

*Structure:* Subangular blocky

*Consistency:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

**Soil and Water Features**

*Depth to a seasonal high water table:* 42 to 60 inches

*Frequency of flooding:* Occasional for brief to long periods in March through June

*Permeability:* Moderately slow

*Available water capacity:* 11 to 12 inches

*Water-supplying capacity:* 9 inches
Runoff: Very slow  
Hydrologic group: C  
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L  
Hazard of erosion: By water—slight; by wind—severe  
Shrink-swell potential: Moderate  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: High  

Characteristics of the Valmy Soil  
Classification: Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic  
Positions on landscape: Fan skirts, inset fans  
Parent material: Loess cap that is high in content of volcanic ash over mixed alluvium  
Slope: 0 to 2 percent  
Elevation: 5,200 to 5,400 feet  
Average annual precipitation: About 8 inches  
Average annual air temperature: About 50 degrees F  
Frost-free season: About 110 days  
Dominant present vegetation: Basin wildrye, black greasewood, basin big sagebrush  

Typical Profile  
Depth: 0 to 6 inches  
Texture: Very fine sandy loam  
Structure: Platy  
Consistency: Slightly hard, very friable  
Reaction: Moderately alkaline  
Salinity: 0 to 2 millimhos per centimeter  
Sodicity (SAR): 0 to 2  

Depth: 6 to 42 inches  
Texture: Fine sandy loam  
Structure: Massive  
Consistency: Slightly hard, friable  
Reaction: Strongly alkaline  
Salinity: 0 to 4 millimhos per centimeter  
Sodicity (SAR): 0 to 2  

Depth: 42 to 60 inches  
Texture: Gravelly sand, very gravelly sand  
Structure: Single grain  
Consistency: Loose  
Reaction: Moderately alkaline  
Salinity: 0 to 4 millimhos per centimeter  
Sodicity (SAR): 0 to 2  

Soil and Water Features  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Moderately rapid  
Available water capacity: 4.7 to 6.8 inches  
Water-supplying capacity: 8 inches  
Runoff: Slow  

Hydrologic group: B  
Erosion factors (upper layer): K value—0.43; T value—4; wind erodibility group—3  
Hazard of erosion: By water—slight; by wind—severe  
Shrink-swell potential: Low  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Low  

Contrasting Inclusions  
Inclusion 1  
Classification: Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic  
Positions on landscape: Flood plains adjacent to stream channels  
Distinctive present vegetation: Creeping wildrye, sedge, rush, willow  

Inclusion 2  
Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic  
Positions on landscape: Flood plain remnants  
Distinctive present vegetation: Torrey quailbush, black greasewood  

Inclusion 3  
Classification: Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic  
Positions on landscape: Fanettes over alluvial flats  
Distinctive present vegetation: Black greasewood, shadsocke  

Major Current Uses  
Livestock grazing, wildlife habitat  

Suitability for Wildlife Habitat Elements  
Wendane Soil  
Wild herbaceous plants (nonirrigated): Very poor  
Shrubs (nonirrigated): Very poor  
Wetland plants: Poor  
Shallow water areas: Fair  

Sonoma Soil  
Wild herbaceous plants (nonirrigated): Poor  
Shrubs (nonirrigated): Poor  
Wetland plants: Fair  
Shallow water areas: Fair  

Valmy Soil  
Wild herbaceous plants (nonirrigated): Poor  
Shrubs (nonirrigated): Poor  

Suitability and Limitations for Selected Uses  
Wendane Soil  
Range seeding: Poor—excess salt, excess sodium  
Roadfill: Poor—low strength  
Topsoil: Poor—excess salt, excess sodium  
Daily cover for landfill: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Wendane soil—VIIw, nonirrigated; Bubus soil—VII, nonirrigated
Range site: Wendane soil—024X007N; Bubus soil—024X003N; Inclusion 1—024X006N; Inclusion 2—024X003N; Inclusion 3—024X002N

1169—Whirlo-Broyles association

Positions on landscape: Fan skirts, inset fans

Composition

Major components:
Whirlo gravelly very fine sandy loam, 4 to 8 percent slopes—60 percent
Broyles very fine sandy loam, 2 to 4 percent slopes—25 percent
Contrasting inclusions:
Xerolic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—9 percent
Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 8 percent slopes—6 percent

Characteristics of the Whirlo Soil

Classification: Typic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: The upper fan skirts
Parent material: Mixed alluvium that includes a large amount of loess
Slope: 4 to 8 percent
Elevation: 5,200 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile
Depth: 0 to 12 inches
Texture: Gravelly very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 12 to 24 inches
Texture: Very gravelly fine sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 24 to 60 inches
Texture: Very gravelly coarse sandy loam
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 4 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.7 to 6.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Broyles Soil

Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The lower fan skirts and inset fans
Parent material: Thin loess mantle over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,200 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile
Depth: 0 to 11 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 11 to 60 inches
Texture: Stratified loam to gravelly loamy sand
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.2 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Xerollic Camborthoids, loamy-skeletal, mixed, mesic
Positions on landscape: The upper inset fans, areas adjacent to fan skirts
Distinctive present vegetation: Needlegrass, Wyoming big sagebrush

Inclusion 2
Classification: Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Margins of shallow channels
Distinctive present vegetation: Spiny hopsage, Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Whirlo Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Broyles Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Whirlo Soil
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage

Embarkments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Broyles Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embarkments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Whirlo soil—Ile, irrigated, and VIIC, nonirrigated; Broyles soil—Ile, irrigated, and VIIC, nonirrigated
Range site: Whirlo and Broyles soils—024X002N; Inclusion 1—028B010N; Inclusion 2—024X020N

1173—Wholan silt loam, alkaline

Positions on landscape: Fan skirts

Composition
Major component: Wholan silt loam, alkaline, 0 to 2 percent slopes—90 percent
Contrasting inclusions:
Broyles very fine sandy loam, 0 to 2 percent slopes—7 percent
Rasille silt loam, 0 to 2 percent slopes—3 percent

Characteristics of the Wholan Soil
Classification: Typic Camborthoids, coarse-silty, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Loess mantle over silty alluvium
Slope: 0 to 2 percent
Elevation: 5,100 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, bluegrass, sickle saltbush

Typical Profile
Depth: 0 to 6 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 6 to 60 inches
Texture: Silt loam, very fine sandy loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Very strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches
**Frequency of flooding:** Rare
**Permeability:** Moderate
Available water capacity: 10 to 11 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

**Contrasting Inclusions**

**Inclusion 1**
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirt remnants
Distinctive present vegetation: Shadscale, bud sagebrush

**Inclusion 2**
Classification: Durixerolic Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Bottlebrush squirreltail, Wyoming big sagebrush

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

**Suitability and Limitations for Selected Uses**
Range seeding: Poor—too arid, excess salts
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Pond reservoir areas: Moderate—seepage

**Embankments, dikes, and levees:** Severe—piping
**Sand:** Improbable source—excess fines
**Gravel:** Improbable source—excess fines

**Restrictive Features for Selected Practices**
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

**Interpretive Groups**
Land capability classification: Wholan soil—IIC, irrigated, and VIIc, nonirrigated
Range site: Wholan soil—024X012N; Inclusion 1—024X002N; Inclusion 2—028B010N

**1177—Wholan-Rasille association, alkaline**

**Positions on landscape:** Fan skirts, inset fans

**Composition**
Major components:
Wholan very fine sandy loam, alkaline, 0 to 2 percent slopes—65 percent
Rasille silt loam, 0 to 2 percent slopes—20 percent

**Contrasting Inclusions:**
Kelk silt loam, occasionally flooded, 0 to 2 percent slopes—5 percent
Xerolic Camborthids, coarse-loamy, mixed, mesic, 0 to 2 percent slopes—5 percent
Creemon very fine sandy loam, 0 to 2 percent slopes—5 percent

**Characteristics of the Wholan Soil**
Classification: Typic Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Broad fan skirts
Parent material: Loess mantle over silty alluvium
Slope: 0 to 2 percent
Elevation: 5,400 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, bluegrass, sickle saltbush

**Typical Profile**
Depth: 0 to 5 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 5 to 60 inches
Texture: Silt loam, very fine sandy loam
**Structure:** Massive  
**Consistency:** Slightly hard, very friable  
**Reaction:** Very strongly alkaline  
**Salinity:** 4 to 8 millimhos per centimeter  
**Sodicity (SAR):** 0 to 5  

**Soil and Water Features**  
**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** Rare  
**Permeability:** Moderate  
**Available water capacity:** 10 to 11 inches  
**Water-supplying capacity:** 8 inches  
**Runoff:** Slow  
**Hydrologic group:** B  
**Erosion factors (upper layer):** K value—0.55; T value—5; wind erodibility group—5  
**Hazard of erosion:** By water—slight; by wind—slight  
**Shrink-swell potential:** Low  
**Corrosivity:** To steel—high; to concrete—low  
**Potential for frost action:** Low

**Characteristics of the Rasilie Soil**  
**Classification:** Durixerollic Camborthids, coarse-silty, mixed, mesic  
**Positions on landscape:** Inset fans, fan drainageways  
**Parent material:** Silty alluvium derived from loess and various kinds of rock  
**Slope:** 0 to 2 percent  
**Elevation:** 5,400 to 5,800 feet  
**Average annual precipitation:** About 8 inches  
**Average annual air temperature:** About 49 degrees F  
**Frost-free season:** About 110 days  
**Dominant present vegetation:** Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush  

**Typical Profile**  
**Depth:** 0 to 6 inches  
**Texture:** Silt loam  
**Structure:** Platy  
**Consistency:** Slightly hard, very friable  
**Reaction:** Mildly alkaline  
**Salinity:** 0 to 2 millimhos per centimeter  
**Sodicity (SAR):** 0 to 2  
**Depth:** 6 to 15 inches  
**Texture:** Silt loam  
**Structure:** Prismatic  
**Consistency:** Slightly hard, very friable  
**Reaction:** Mildly alkaline  
**Salinity:** 0 to 2 millimhos per centimeter  
**Sodicity (SAR):** 0 to 2  
**Depth:** 15 to 60 inches  
**Texture:** Silt loam, very fine sandy loam

**Structure:** Massive  
**Consistency:** Slightly hard, friable  
**Reaction:** Moderately alkaline  
**Salinity:** 2 to 8 millimhos per centimeter  
**Sodicity (SAR):** 0 to 5  

**Soil and Water Features**  
**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** Rare  
**Permeability:** Moderate  
**Available water capacity:** 11 to 12 inches  
**Water-supplying capacity:** 8 inches  
**Runoff:** Slow  
**Hydrologic group:** B  
**Erosion factors (upper layer):** K value—0.55; T value—5; wind erodibility group—6  
**Hazard of erosion:** By water—slight; by wind—slight  
**Shrink-swell potential:** Low  
**Corrosivity:** To steel—high; to concrete—low  
**Potential for frost action:** Moderate

**Contrasting Inclusions**  
**Inclusion 1**  
**Classification:** Durixerollic Camborthids, fine-silty, mixed, mesic  
**Positions on landscape:** Inset fans on the lower margins of fan skirts  
**Distinctive present vegetation:** Basin big sagebrush, black greasewood

**Inclusion 2**  
**Classification:** Xerollic Camborthids, coarse-loamy, mixed, mesic  
**Positions on landscape:** The higher areas on inset fans  
**Distinctive present vegetation:** Wyoming big sagebrush, spiny hopsage

**Inclusion 3**  
**Classification:** Duric Camborthids, coarse-silty, mixed, mesic  
**Positions on landscape:** Fan skirt remnants  
**Distinctive present vegetation:** Shadscale, bud sagebrush

**Major Current Uses**  
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Wholan Soil**  
*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor

**Rasilie Soil**  
*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor
Suitability and Limitations for Selected Uses

**Wholan Soil**

*Range seeding:* Poor—too arid, excess salt  
*Roadfill:* Good  
*Topsoil:* Poor—excess salt  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—flooding  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines  

**Rasille Soil**

*Range seeding:* Fair—too arid  
*Roadfill:* Good  
*Topsoil:* Fair—excess salt  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight  
*Local roads and streets:* Moderate—flooding, frost action  
*Pond reservoir areas:* Moderate—seepage  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

Restrictive Features for Selected Practices

**Wholan Soil**

*Drainage:* Deep to water  
*Irrigation:* Erodes easily  
*Terraces and diversions:* Erodes easily

**Rasille Soil**

*Drainage:* Deep to water  
*Irrigation:* Erodes easily, excess salt  
*Terraces and diversions:* Erodes easily

Interpretive Groups

*Land capability classification:* Wholan soil—Ilc, irrigated, and VIlc, nonirrigated; Rasille soil—Ilc, irrigated, and Vlc, nonirrigated  
*Range site:* Wholan soil—024X012N; Rasille soil—024X005N; Inclusion 1—024X006N; Inclusion 2—024X020N; Inclusion 3—024X002N

1178—Wholan-Rasille association, nonalkaline

*Positions on landscape:* Fan skirts  

**Composition**

*Major components:*  
Wholan silt loam, 0 to 2 percent slopes—60 percent  
Rasille silt loam, gravelly substratum, 0 to 2 percent slopes—25 percent

Contrasting inclusions:  
Wholan silt loam, alkaline, 0 to 2 percent slopes—5 percent  
Broyles very fine sandy loam, 0 to 4 percent slopes—5 percent  
Orovada fine sandy loam, 0 to 2 percent slopes—5 percent

**Characteristics of the Wholan Soil**

*Classification:* Typic Camborthids, coarse-silty, mixed, mesic  
*Positions on landscape:* Smooth fan skirts  
*Parent material:* Loess mantle over silty alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 5,000 to 5,400 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat

**Typical Profile**

*Depth:* 0 to 5 inches  
*Texture:* Silt loam  
*Structure:* Platy  
*Consistency:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2

*Depth:* 5 to 60 inches  
*Texture:* Silt loam, very fine sandy loam  
*Structure:* Massive  
*Consistency:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* Rare  
*Permeability:* Moderate  
*Available water capacity:* 10 to 12 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.55; T value—5; wind erodibility group—5  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low
Characteristics of the Rasile Soil

Classification: Durixerollic Camborthids, coarse-silty, mixed, mesic

Positions on landscape: Fan drainageways

Parent material: Silty alluvium derived from loess and various kinds of rock

Slope: 0 to 2 percent

Elevation: 5,000 to 5,400 feet

Average annual precipitation: About 8 inches

Average annual air temperature: About 49 degrees F

Frost-free season: About 110 days

Dominant present vegetation: Bottlebrush squirreltail, Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile

Depth: 0 to 6 inches

Texture: Silt loam

Structure: Platy

Consistency: Slightly hard, very friable

Reaction: Mildly alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 2

Depth: 6 to 15 inches

Texture: Silt loam

Structure: Prismatic

Consistency: Slightly hard, very friable

Reaction: Mildly alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 2

Depth: 15 to 41 inches

Texture: Silt loam, very fine sandy loam

Structure: Massive

Consistency: Slightly hard, friable

Reaction: Moderately alkaline

Salinity: 2 to 8 millimhos per centimeter

Sodicity (SAR): 2 to 10

Depth: 41 to 60 inches

Texture: Stratified fine sandy loam to very gravely coarse sand

Structure: Massive

Consistency: Slightly hard, very friable

Reaction: Moderately alkaline

Salinity: 2 to 8 millimhos per centimeter

Sodicity (SAR): 0 to 5

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: Rare

Permeability: Moderate

Available water capacity: 7.6 to 9.3 inches

Water-supplying capacity: 8 inches

Runoff: Slow

Hydrologic group: B

Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—6

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1

Classification: Typic Camborthids, coarse-silty, mixed, mesic

Positions on landscape: Convex areas of fan skirts

Distinctive present vegetation: Sickle saltbush

Inclusion 2

Classification: Duric Camborthids, coarse-loamy, mixed, mesic

Positions on landscape: The higher fan skirt remnants

Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic

Positions on landscape: Adjacent to channels and fanettes

Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Wholan Soil

Wild herbaceous plants (nonirrigated): Poor

Shrubs (nonirrigated): Poor

Rasile Soil

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Wholan Soil

Range seeding: Poor—too arid, excess salt

Roadfill: Good

Topsoil: Poor—excess salt

Daily cover for landfill: Good

Shallow excavations: Slight

Local roads and streets: Moderate—flooding

Pond reservoir areas: Moderate—seeage

Embankments, dikes, and levees: Severe—piping

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Rasile Soil

Range seeding: Fair—too arid

Roadfill: Good

Topsoil: Fair—area reclaim, excess salt
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Restrictive Features for Selected Practices

Wholan Soil
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Land capability classification: Wholan soil—IIC, irrigated, and VILC, nonirrigated; Rasile soil—IIC, irrigated, and VILC, nonirrigated
Range site: Wholan soil—024X004N; Rasile soil—028B010N; Inclusion 1—024X012N; Inclusion 2—024X002N; Inclusion 3—028B010N

1281—Ricert-Whirlo-Pineal association
Positions on landscape: Piedmont slopes

Composition

Major components:
Ricert gravelly silt loam, 4 to 8 percent slopes—45 percent
Whirlo fine sandy loam, 4 to 8 percent slopes—25 percent
Pineal gravelly fine sandy loam, 4 to 8 percent slopes—15 percent
Contrasting inclusions:
Duric Natrargids, fine, montmorillonitic, mesic, 4 to 15 percent slopes—9 percent
Xeric Torriorthents, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—4 percent
Typic Nadurargids, fine-loamy, mixed, mesic, 4 to 15 percent slopes—2 percent

Characteristics of the Ricert Soil
Classification: Duric Natrargids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Parent material: Thin loess deposits over mixed alluvium
Slope: 4 to 8 percent
Elevation: 5,300 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile
Depth: 0 to 6 inches
Texture: Gravelly silt loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 6 to 18 inches
Texture: Loam, clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 18 to 60 inches
Texture: Very gravelly sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value=0.24; T value=5;
wind erodibility group=6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Whirlo Soil
Classification: Typic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans, fan skirts
Parent material: Mixed alluvium that includes a large amount of loess
Slope: 4 to 8 percent
Elevation: 5,300 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass
**Typical Profile**

*Depth:* 0 to 12 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistency:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 12 to 24 inches  
*Texture:* Very gravelly fine sandy loam  
*Structure:* Massive  
*Consistency:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13  
*Depth:* 24 to 60 inches  
*Texture:* Very gravelly coarse sandy loam  
*Structure:* Single grain  
*Consistency:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 16 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately rapid  
*Available water capacity:* 4.2 to 5.4 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.43; T value—5; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low  

**Characteristics of the Pineal Soil**

*Classification:* Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Fan aprons  
*Parent material:* Mixed alluvium  
*Slope:* 4 to 8 percent  
*Elevation:* 5,300 to 6,000 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 49 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush  

**Depth:** 0 to 5 inches  
*Texture:* Gravelly fine sandy loam  
*Structure:* Platy  
*Consistency:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 5 to 11 inches  
*Texture:* Very gravelly loam, very gravelly clay loam  
*Structure:* Subangular blocky  
*Consistency:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 11 to 60 inches  
*Texture:* Extremely gravelly sandy loam, extremely gravelly loamy sand  
*Structure:* Single grain  
*Consistency:* Loose  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 3.0 to 4.2 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate  

**Contrasting Inclusions**

**Inclusion 1**

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic  
*Positions on landscape:* The higher areas on fan piedmont remnants  
*Distinctive present vegetation:* Shadscale, bud sagebrush  

**Inclusion 2**

*Classification:* Xeric Torriorthents, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Side slopes of fan piedmont remnants  
*Distinctive present vegetation:* Wyoming big sagebrush, shadscale
Inclusion 3
Classification: Typic Natrargids, fine-loamy, mixed, mesic
Positions on landscape: Shoulder slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Ricert Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Whirlot Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Pineal Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Ricert Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embarkments, dikes, and levees: Severe—seepage, excess sodium
Sand: Probable source
Gravel: Probable source

Whirlot Soil
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embarkments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Pineal Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim

Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embarkments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Ricert soil—IVe, irrigated, and VIIa, nonirrigated; Whirlot soil—Ile, irrigated, and VIIc, nonirrigated; Pineal soil—IVe, irrigated, and VIa, nonirrigated
Range site: Ricert and Whirlot soils—024X002N; Pineal soil—028B010N; Inclusion 1—024X002N; Inclusion 2—024X026N; Inclusion 3—024X002N

1282—Ricert-Broyles association
Positions on landscape: Fan piedmonts

Composition
Major components:
Ricert very fine sandy loam, 2 to 8 percent slopes—60 percent
Broyles very fine sandy loam, 2 to 8 percent slopes—25 percent
Contrasting inclusions:
Typic Camborthids, loamy-skeletal, mixed, mesic, 4 to 8 percent slopes—8 percent
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—4 percent
Durorthic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—3 percent

Characteristics of the Ricert Soil
Classification: Duric Natrargids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Parent material: Thin loess deposits over mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,200 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile
Depth: 0 to 6 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 6 to 18 inches
Texture: Loam, clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 18 to 60 inches
Texture: Very gravelly sandy loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Broyles Soil
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan aprons
Parent material: Thin loess mantle over mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,200 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile
Depth: 0 to 13 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline

Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 13 to 60 inches
Texture: Stratified loam to gravelly loamy sand
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.0 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Typic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Classification: Xerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Duorthic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Ricert Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Broyles Soil  
*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor  

**Suitability and Limitations for Selected Uses**

**Ricert Soil**  
*Range seeding:* Poor—too arid, excess salt, excess sodium  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim, excess sodium  
*Daily cover for landfill:* Poor—seepage, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage, excess sodium  
*Sand:* Probable source  
*Gravel:* Probable source  

**Broyles Soil**  
*Range seeding:* Poor—too arid, excess salt  
*Roadfill:* Good  
*Topsoil:* Poor—small stones  
*Daily cover for landfill:* Fair—too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Slight  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—seepage  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines  

**Interpretive Groups**  
*Land capability classification:* Ricert soil—IVe, irrigated, and VIIc, nonirrigated; Broyles soil—Ille, irrigated, and VIIc, nonirrigated  
*Range site:* Ricert and Broyles soils—024X002N; Inclusion 1—024X002N; Inclusion 2—024X020N; Inclusion 3—024X002N  

**1284—Ricert-Zineb-Pineval association**  
*Positions on landscape:* Fan piedmonts  

**Composition**  

*Major components:*  
Ricert very gravely very fine sandy loam, 2 to 4 percent slopes—40 percent  
Zineb very gravely sandy loam, 4 to 8 percent slopes—25 percent  
Pineval gravely fine sandy loam, 2 to 4 percent slopes—20 percent  

*Contrasting inclusions:*  
Durorthic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 8 percent slopes—7 percent  
Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—5 percent  
Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 4 percent slopes—3 percent  

**Characteristics of the Ricert Soil**  
*Classification:* Duric Natragids, fine-loamy, mixed, mesic  
*Positions on landscape:* The lower summits of fan piedmont remnants  
*Parent material:* Thin loess deposits over mixed alluvium  
*Slope:* 2 to 4 percent  
*Elevation:* 6,200 to 6,500 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass  

**Typical Profile**  
*Depth:* 0 to 6 inches  
*Texture:* Very gravelly very fine sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 6 to 18 inches  
*Texture:* Loam, clay loam  
*Structure:* Prismatic  
*Consistence:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46  
*Depth:* 18 to 60 inches  
*Texture:* Very gravelly sandy loam  
*Structure:* Massive  
*Consistence:* Soft, very friable  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 8 millimhos per centimeter  
*Sodicity (SAR):* 46 to 60  

**Soil and Water Features**  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 4 to 6 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Medium  
*Hydrologic group:* B
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Zineb Soil
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Parent material: Mixed alluvium that includes volcanic ash
Slope: 4 to 8 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Very gravelly sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 13 inches
Texture: Gravelly loam, gravelly very fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 13 to 19 inches
Texture: Very gravelly sandy loam, very gravelly loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 19 to 27 inches
Texture: Extremely cobbly sandy loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 27 to 60 inches
Texture: Extremely cobbly coarse sand, extremely cobbly loamy coarse sand
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate over rapid
Available water capacity: 3.0 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Pineal Soil
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: The higher summits of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 4 percent
Elevation: 6,200 to 6,600 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 10 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate slow
Available water capacity: 3.0 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Classification: Durixerolitic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan skirts near seeps
Distinctive present vegetation: Wyoming big sagebrush, black greasewood

Inclusion 3
Classification: Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Ricert Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Zineb Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Ricert Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Sand: Probable source
Gravel: Probable source

Zineb Soil
Range seeding: Poor—small stones, droughty
Roadfill: Fair—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, large stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—large stones
Gravel: Improbable source—large stones

Pineval Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups

Land capability classification: Ricert soil—IVs, irrigated, and VIIIs, nonirrigated; Zineb soil—VIIIs, nonirrigated; Pineval soil—IVe, irrigated, and Vs, nonirrigated
Range site: Ricert soil—024X002N; Zineb and Pineval soils—028B010N; Inclusion 1—028B017N; Inclusion 2—024X022N; Inclusion 3—028B010N
1285—Ricert-Bubus-Broyles association

*Positions on landscape:* Piedmont slopes

**Composition**

*Major components:*
  - Ricert gravelly silt loam, 0 to 2 percent slopes—45 percent
  - Bubus very fine sandy loam, 0 to 2 percent slopes—25 percent
  - Broyles silt loam, 2 to 4 percent slopes—15 percent

*Contrasting inclusions:*
  - Orovida fine sandy loam, 0 to 4 percent slopes—9 percent
  - Valmy very fine sandy loam, 0 to 2 percent slopes—6 percent

**Characteristics of the Ricert Soil**

*Classification:* Duric Natrargids, fine-loamy, mixed, mesic

*Positions on landscape:* Summits of fan piedmont remnants

*Parent material:* Thin loess deposits over mixed alluvium

*Slope:* 0 to 2 percent

*Elevation:* 5,200 to 5,500 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass, bluegrass

**Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Gravelly silt loam

*Structure:* Platy

*Consistency:* Soft, very friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

*Depth:* 6 to 18 inches

*Texture:* Loam, clay loam

*Structure:* Prismatic

*Consistency:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 18 to 60 inches

*Texture:* Very gravelly sandy loam

*Structure:* Massive

*Consistency:* Soft, very friable

*Reaction:* Strongly alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.24; T value—5;

*wind erodibility group:* 6

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

**Characteristics of the Bubus Soil**

*Classification:* Durorthic Torriorthents, coarse-loamy, mixed (calcareous), mesic

*Positions on landscape:* The lower fan skirt margins and inset fans

*Parent material:* Mixed alluvium that is high in content of pyroclastic material

*Slope:* 0 to 2 percent

*Elevation:* 5,200 to 5,500 feet

*Average annual precipitation:* About 7 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 120 days

*Dominant present vegetation:* Shadscale, black greasewood, bottlebrush squirreltail

**Typical Profile**

*Depth:* 0 to 6 inches

*Texture:* Very fine sandy loam

*Structure:* Platy

*Consistency:* Slightly hard, very friable

*Reaction:* Moderately alkaline

*Salinity:* 8 to 16 millimhos per centimeter

*Sodicity (SAR):* 5 to 13

*Depth:* 6 to 60 inches

*Texture:* Stratified sandy loam to silt loam

*Structure:* Massive

*Consistency:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 16 to 30 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 9 to 10 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

**Characteristics of the Broyles Soil**

Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The higher parts of fan skirts
Parent material: Thin loess mantle over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,200 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

**Typical Profile**

Depth: 0 to 13 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10

Depth: 13 to 60 inches
Texture: Stratified loam to gravelly loamy sand
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.2 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

**Contrasting Inclusions**

Inclusion 1
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Bottlebrush squirreltail, needlegrass, Wyoming big sagebrush

Inclusion 2
Classification: Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Fan skirt margins adjacent to stream terraces
Distinctive present vegetation: Shadscale, Wyoming big sagebrush, black greasewood

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Ricert Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Bubus Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Broyles Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Suitability and Limitations for Selected Uses**

**Ricert Soil**
Range seeding: Poor—too arid, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Sand: Probable source
Gravel: Probable source

**Bubus Soil**
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Moderate—seepage
Embarkments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Broyles Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embarkments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Ricert soil—IVs, irrigated, and Vlls, nonirrigated; Bubus soil—IIs, irrigated, and Vlls, nonirrigated; Broyles soil—Ile, irrigated, and Vllc, nonirrigated
Range site: Ricert and Broyles soils—024X002N; Bubus soil—024X003N; Inclusion 1—028B010N; Inclusion 2—024X022N

1286—Ricert-Tenabo-Broyles association
Positions on landscape: Fan piedmonts

Composition
Major components:
Ricert gravelly fine sandy loam, 4 to 8 percent slopes—45 percent
Tenabo gravelly very fine sandy loam, 2 to 4 percent slopes—25 percent
Broyles very fine sandy loam, 2 to 4 percent slopes—15 percent

Contrasting inclusions:
Orovada fine sandy loam, 2 to 4 percent slopes—7 percent
Chiara gravelly loam, 2 to 8 percent slopes—5 percent
Typic Torriorthents, loamy, mixed (calcareous), mesic, shallow, 15 to 30 percent slopes—3 percent

Characteristics of the Ricert Soil
Classification: Duric Natrargids, fine-loamy, mixed, mesic
Positions on landscape: Shoulder slopes of fan piedmont remnants
Parent material: Thin loess deposits over mixed alluvium
Slope: 4 to 8 percent
Elevation: 5,400 to 5,800 feet
Average annual precipitation: About 7 inches

Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile
Depth: 0 to 6 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 6 to 18 inches
Texture: Loam, clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 25 to 46

Depth: 18 to 60 inches
Texture: Very gravelly sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Tenabo Soil
Classification: Tytic Nadurargids, loamy, mixed, mesic, shallow
Positions on landscape: Summits of fan piedmont remnants
Parent material: Thin loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,400 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

**Typical Profile**

**Rock fragments on surface:** 30 percent pebbles
**Depth:** 0 to 4 inches
**Texture:** Gravelly very fine sandy loam
**Structure:** Platy
**Consistency:** Slightly hard, very friable
**Reaction:** Moderately alkaline
**Salinity:** 2 to 4 millimhos per centimeter
**Sodicity (SAR):** 0 to 5

**Depth:** 4 to 15 inches
**Texture:** Clay loam, gravelly clay loam, silty clay loam
**Structure:** Prismatic
**Consistency:** Hard, friable
**Reaction:** Strongly alkaline
**Salinity:** 2 to 4 millimhos per centimeter
**Sodicity (SAR):** 25 to 46

**Depth:** 15 to 28 inches
**Material:** Indurated hardpan
**Structure:** Platy
**Consistency:** Extremely hard, extremely firm
**Depth:** 28 to 60 inches
**Texture:** Stratified very gravelly sandy loam to extremely gravelly coarse sand
**Structure:** Single grain
**Consistency:** Loose
**Reaction:** Strongly alkaline
**Salinity:** 8 to 16 millimhos per centimeter
**Sodicity (SAR):** 46 to 60

**Soil and Water Features**

**Depth to the hardpan:** 9 to 20 inches
**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None
**Permeability:** Moderately rapid
**Available water capacity:** 6.0 to 7.5 inches
**Water-supplying capacity:** 7 inches
**Runoff:** Slow
**Hydrologic group:** B
**Erosion factors (upper layer):** K value—0.55; T value—5; wind erodibility group—3
**Hazard of erosion:** By water—slight; by wind—severe
**Shrink-swell potential:** Low
**Corrosivity:** To steel—high; to concrete—moderate
**Potential for frost action:** Low

**Characteristics of the Broyles Soil**

**Classification:** Duric Camborthids, coarse-loamy, mixed, mesic

**Positions on landscape:** Inset fans
**Parent material:** Thin loess mantle over mixed alluvium
**Slope:** 2 to 4 percent
**Elevation:** 5,400 to 5,800 feet
**Average annual precipitation:** About 7 inches
**Average annual air temperature:** About 49 degrees F
**Frost-free season:** About 120 days
**Dominant present vegetation:** Shadscale, bud sagebrush, Indian ricegrass, bluegrass

**Typical Profile**

**Depth:** 0 to 13 inches
**Texture:** Very fine sandy loam
**Structure:** Platy
**Consistency:** Slightly hard, very friable
**Reaction:** Moderately alkaline
**Salinity:** 2 to 4 millimhos per centimeter
**Sodicity (SAR):** 2 to 10

**Depth:** 13 to 60 inches
**Texture:** Stratified loam to gravelly loamy sand
**Structure:** Massive
**Consistency:** Hard, friable
**Reaction:** Strongly alkaline
**Salinity:** 8 to 16 millimhos per centimeter
**Sodicity (SAR):** 25 to 46

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None
**Permeability:** Moderately rapid
**Available water capacity:** 6.0 to 7.5 inches
**Water-supplying capacity:** 7 inches
**Runoff:** Slow
**Hydrologic group:** B
**Erosion factors (upper layer):** K value—0.55; T value—5; wind erodibility group—3
**Hazard of erosion:** By water—slight; by wind—severe
**Shrink-swell potential:** Low
**Corrosivity:** To steel—high; to concrete—moderate
**Potential for frost action:** Low

**Contrasting Inclusions**

**Inclusion 1**
**Classification:** Durixerollic Camborthids, coarse-loamy, mixed, mesic
**Positions on landscape:** Narrow inset fans, the lower side slopes of fan piedmonts
**Distinctive present vegetation:** Wyoming big sagebrush, spiny hopsage

**Inclusion 2**
**Classification:** Xerollic Durorthids, loamy, mixed, mesic, shallow
**Positions on landscape:** Shoulder slopes of fan piedmont remnants

**Distinctive present vegetation:** Wyoming big sagebrush, downy rabbitbrush

**Inclusion 3**

**Classification:** Typic Torriorthents, loamy, mixed (calcareous), mesic, shallow

**Positions on landscape:** Convex rock pediment remnants

**Distinctive present vegetation:** Shadscale, bud sagebrush, downy rabbitbrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Ricert Soil**

- *Wild herbaceous plants (nonirrigated):* Very poor
- *Shrubs (nonirrigated):* Very poor

**Tenabo Soil**

- *Wild herbaceous plants (nonirrigated):* Very poor
- *Shrubs (nonirrigated):* Very poor

**Broyles Soil**

- *Wild herbaceous plants (nonirrigated):* Very poor
- *Shrubs (nonirrigated):* Very poor

**Suitability and Limitations for Selected Uses**

**Ricert Soil**

- *Range seeding:* Poor—too arid, excess salt, excess sodium
- *Roadfill:* Good
- *Topsoil:* Poor—small stones, area reclaim, excess sodium
- *Daily cover for landfill:* Poor—seepage, small stones
- *Shallow excavations:* Severe—cutbanks cave
- *Local roads and streets:* Slight
- *Pond reservoir areas:* Severe—seepage
- *Embankments, dikes, and levees:* Severe—piping
- *Sand:* Probable source
- *Gravel:* Probable source

**Tenabo Soil**

- *Range seeding:* Poor—too arid, droughty, excess sodium
- *Roadfill:* Poor—cemented pan
- *Topsoil:* Poor—cemented pan, small stones, too sandy
- *Daily cover for landfill:* Poor—cemented pan, seepage, too sandy
- *Shallow excavations:* Severe—cemented pan, cutbanks cave
- *Local roads and streets:* Severe—cemented pan
- *Pond reservoir areas:* Severe—seepage, cemented pan
- *Embankments, dikes, and levees:* Severe—seepage, excess sodium, excess salt

**Sand:** Probable source

**Gravel:** Probable source

**Broyles Soil**

- *Range seeding:* Poor—too arid, excess salt, excess sodium
- *Roadfill:* Good
- *Topsoil:* Poor—small stones, excess salt
- *Daily cover for landfill:* Fair—too sandy, small stones
- *Shallow excavations:* Severe—cutbanks cave
- *Local roads and streets:* Slight
- *Pond reservoir areas:* Severe—seepage
- *Embankments, dikes, and levees:* Severe—piping
- *Sand:* Improbable source—excess fines
- *Gravel:* Improbable source—excess fines

**Interpretive Groups**

**Land capability classification:** Ricert and Tenabo soils—I, irrigated, and Vlls, nonirrigated; Broyles soil—Ile, irrigated, and Vllc, nonirrigated

**Range site:** Ricert, Tenabo, and Broyles soils—024X002N; Inclusions 1 and 2—028B010N; Inclusion 3—024X002N

**1287—Ricert-Orovada-Broyles association**

**Positions on landscape:** Piedmont slopes

**Composition**

**Major components:**

- Ricert very gravely very fine sandy loam, 2 to 4 percent slopes—50 percent
- Orovada very gravely very fine sandy loam, 2 to 4 percent slopes—20 percent
- Broyles very gravely very fine sandy loam, 2 to 8 percent slopes—15 percent

**Contrasting inclusions:**

- Durixerollic Haplargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—5 percent
- Zinbel gravelly loam, 2 to 8 percent slopes—5 percent
- Hapllic Durargids, loamy, mixed, mesic, shallow, 2 to 8 percent slopes—5 percent

**Characteristics of the Ricert Soil**

**Classification:** Duric Natrargids, fine-loamy, mixed, mesic

**Positions on landscape:** Fan piedmont remnants

**Parent material:** Thin loess deposits over mixed alluvium

**Slope:** 2 to 4 percent

**Elevation:** 6,000 to 6,500 feet

**Average annual precipitation:** About 7 inches

**Average annual air temperature:** About 48 degrees F

**Frost-free season:** About 120 days

**Dominant present vegetation:** Shadscale, bud sagebrush, Indian ricegrass, bluegrass
Lander County, Nevada, South Part

Typical Profile

Depth: 0 to 7 inches
Texture: Very gravelly very fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 7 to 20 inches
Texture: Loam, clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 25 to 46

Depth: 20 to 60 inches
Texture: Very gravelly sandy loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Orovada Soil

Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 6,000 to 6,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

Depth: 0 to 8 inches
Texture: Gravelly very fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 7

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8 to 10 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.37; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Broyles Soil

Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts, inset fan remnants
Parent material: Thin loess mantle over mixed alluvium
Slope: 2 to 8 percent
Elevation: 6,000 to 6,400 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile

Depth: 0 to 13 inches
Texture: Gravelly very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 13 to 60 inches
Texture: Stratified loam to gravelly loamy sand
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.2 to 7.4 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—5;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Fan aprons
Distinctive present vegetation: Bottlebrush squirreltail, black sagebrush

Inclusion 2
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: The highest part of fan aprons and inset fans near channels
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Haplic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: Convex, highest part of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Ricert Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Broyles Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Ricert Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Sand: Probable source
Gravel: Probable source

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Broyles Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—too sandy, small stones
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Ricert soil—IVs, irrigated,
Landaver County, Nevada, South Part

and Vls, nonirrigated; Orovada soil—Itle, irrigated, and Vlc, nonirrigated; Broyles soil—Ille, irrigated, and Vllc, nonirrigated

Range site: Ricert and Broyles soils—024X002N; Orovada soil—028B010N; Inclusion 1—024X030N; Inclusion 2—028B010N; Inclusion 3—024X002N

1288—Ricert-Orovada-Tenabo

association

Positions on landscape: Fan piedmonts

Composition

Major components:
Ricert gravelly fine sandy loam, 2 to 8 percent slopes—40 percent
Orovada fine sandy loam, 2 to 8 percent slopes—30 percent
Tenabo very fine sandy loam, 2 to 4 percent slopes—15 percent

Contrasting inclusions:
Durixerollic Haplargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—6 percent
Duric Camborthids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—6 percent
Duric Natrargids, fine, montmorillonitic, mesic, 2 to 4 percent slopes—3 percent

Characteristics of the Ricert Soil

Classification: Duric Natrargids, fine-loamy, mixed, mesic

Positions on landscape: The lower summits of fan piedmont remnants

Parent material: Thin loess deposits over mixed alluvium

Slope: 2 to 8 percent

Elevation: 5,700 to 6,100 feet

Average annual precipitation: About 7 inches

Average annual air temperature: About 48 degrees F

Frost-free season: About 120 days

Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile

Depth: 0 to 6 inches

Texture: Gravelly fine sandy loam

Structure: Platy

Consistency: Soft, very friable

Reaction: Moderately alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 5

Depth: 6 to 18 inches

Texture: Loam, clay loam

Structure: Prismatic

Consistency: Hard, firm

Reaction: Strongly alkaline

Salinity: 2 to 4 millimhos per centimeter

Sodicity (SAR): 25 to 46

Depth: 18 to 60 inches

Texture: Very gravelly sandy loam

Structure: Massive

Consistency: Soft, very friable

Reaction: Strongly alkaline

Salinity: 2 to 8 millimhos per centimeter

Sodicity (SAR): 46 to 60

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderately slow

Available water capacity: 4 to 6 inches

Water-supplying capacity: 7 inches

Runoff: Medium

Hydrologic group: B

Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—4

Hazard of erosion: By water—slight; by wind—severe

Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—high

Potential for frost action: Low

Characteristics of the Orovada Soil

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic

Positions on landscape: Inset fans

Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium

Slope: 2 to 8 percent

Elevation: 5,700 to 6,100 feet

Average annual precipitation: About 8 inches

Average annual air temperature: About 48 degrees F

Frost-free season: About 110 days

Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

Depth: 0 to 8 inches

Texture: Fine sandy loam

Structure: Subangular blocky

Consistency: Slightly hard, very friable

Reaction: Neutral

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches

Texture: Fine sandy loam, loam

Structure: Subangular blocky

Consistency: Slightly hard, very friable

Reaction: Mildly alkaline

Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.0 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Tenabo Soil
Classification: Typic Nadrargids, loamy, mixed, mesic, shallow
Positions on landscape: The higher summits of fan piedmont remnants
Parent material: Thin loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,700 to 6,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 4 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 5 to 10
Depth: 4 to 15 inches
Texture: Clay loam, gravelly clay loam, silty clay loam
Structure: Prismatic
Consistence: Hard, friable
Reaction: Strongly alkaline

Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 15 to 28 inches
Material: Indurated hardpan
Structure: Platy
Consistence: Extremely hard, extremely firm
Depth: 28 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 4 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to the hardpan: 9 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.8 to 3.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.55; T value—1;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Durixerolic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Inclusion 2
Classification: Duric Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Classification: Duric Natrargids, fine, montmorillonitic, mesic
Positions on landscape: The upper part of shoulder slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush
Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Ricert Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Tenabo Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Ricert Soil
Range seeding: Poor—too arid, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Sand: Probable source
Gravel: Probable source

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Tenabo Soil
Range seeding: Poor—too arid, excess sodium
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones, too sandy
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess sodium, excess salt
Sand: Probable source
Gravel: Probable source

Interpretive Groups

Land capability classification: Ricert and Tenabo soils—
IVE, irrigated, and Vlls, nonirrigated; Orovada soil—
IIle, irrigated, and Vlc, nonirrigated
Range site: Ricert and Tenabo soils—024X002N;
Orovada soil—02B010N; Inclusion 1—024X020N;
Inclusions 2 and 3—024X002N

1289—Ricert-Blackhawk-Orovada association

Positions on landscape: Fan piedmonts

Composition

Major components:
Ricert gravelly fine sandy loam, 4 to 15 percent slopes—40 percent
Blackhawk very fine sandy loam, 2 to 4 percent slopes—25 percent
Orovada fine sandy loam, 2 to 8 percent slopes—20 percent
Contrasting inclusions:
Duric Camborthids, loamy-skeletal, mixed, mesic, 8 to 30 percent slopes—9 percent
Xerolic Camborthids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—3 percent
Duric Camborthids, fine-loamy, mixed, mesic, 8 to 30 percent slopes—2 percent
Aquic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 2 percent slopes—1 percent

Characteristics of the Ricert Soil

Classification: Duric Natargids, fine-loamy, mixed, mesic
Positions on landscape: Shoulder slopes and side slopes of fan piedmont remnants
Parent material: Thin loess deposits over mixed alluvium
Slope: 0 to 8 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile

Depth: 0 to 6 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 6 to 18 inches
Texture: Loam, clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 18 to 60 inches
Texture: Very gravelly sandy loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.20; T value—5;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Blackhawk Soil
Classification: Entic Durorthids, loamy, mixed, mesic,
shallower
Positions on landscape: Summits of fan piedmont
remnants
Parent material: Loess over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirrelltail

Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 14 to 30 inches
Material: Cemented hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 30 to 48 inches
Texture: Loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Very strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 48 to 60
Texture: Stratified very gravelly sandy loam to extremely
gravelly coarse sand
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.2 to 2.7 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.43; T value—1;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Orovida Soil
Classification: Durixerollic Camborthids, coarse-loamy,
mixed, mesic
Positions on landscape: Inset fans, fan drainage ways
Parent material: Loess mantle that is high in content of
volcanic ash over mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Classification: Duric Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: South-facing, eroded side slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 1

Classification: Duric Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: South-facing, eroded side slopes of fan piedmont remnants
Distinctive present vegetation: Needlegrass, Wyoming big sagebrush

Inclusion 3
Classification: Duric Camborthids, fine-loamy, mixed, mesic
Positions on landscape: Eroded scarps along the southeastern edge of fan piedmont remnants
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 4
Classification: Aquic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Fan skirts
Distinctive present vegetation: Basin big sagebrush, basin wildrye, black greasewood

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Ricert Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Blackhawk Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Ricert Soil
Range seeding: Poor—too arid, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfills: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage, slope
Embarkments, dikes, and levees: Severe—seepage, excess sodium
Sand: Probable source
Gravel: Probable source

Blackhawk Soil
Range seeding: Poor—too arid, droughty
Roadfill: Good
Topsoil: Poor—cemented pan, area reclaim
Daily cover for landfills: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Moderate—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess salt
Sand: Probable source
Gravel: Probable source

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Ricert soil—VII, nonirrigated; Blackhawk soil—IVe, irrigated, and IIIe, irrigated, and
Orovada soil—IIle, irrigated, and
Vlc, nonirrigated
Range site: Ricert and Blackhawk soils—024X002N;
Orovada soil—028B010N; Inclusion 1—024X002N;
Inclusion 2—028B010N; Inclusion 3—024X003N;
Inclusion 4—024X006N

1371—Chad-Gando-Softscrabble association

Positions on landscape: Mountains

Composition

Major components:
Chad cobbly loam, 15 to 50 percent slopes—45 percent
Gando very gravelly loam, 15 to 30 percent slopes—20 percent
Softscrabble fine sandy loam, 15 to 30 percent slopes—20 percent
Contrasting inclusions:
Waiti loam, 8 to 30 percent slopes—5 percent
Rock outcrop—5 percent
Welch loam, drained, 4 to 8 percent slopes—3 percent
Welch loam, 4 to 8 percent slopes—2 percent

Characteristics of the Chad Soil
Classification: Aridic Argixerolls, fine, mixed, frigid
Positions on landscape: Convex side slopes of mountains
Parent material: Residuum derived from chert and shale
Slope: 15 to 50 percent
Elevation: 6,200 to 7,600 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 80 days

Dominant present vegetation: Bluebunch wheatgrass,
Thurber needlegrass, mountain big sagebrush

Typical Profile
Rock fragments on surface: 20 percent cobbles, 10 percent pebbles
Depth: 0 to 17 inches
Texture: Cobbly loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Neutral

Depth: 17 to 42 inches
Texture: Gravelly clay, clay
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline

Depth: 42 inches
Material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.6 to 5.9 inches
Water-supplying capacity: 13 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.28; T value—3; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Gando Soil
Classification: Lithic Haploxerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Mountain crests
Parent material: Residuum derived from mixed sedimentary rock
Slope: 15 to 30 percent
Elevation: 6,800 to 7,800 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 80 days

Dominant present vegetation: Bluegrass, Idaho fescue, low sagebrush, black sagebrush

Typical Profile
Rock fragments on surface: 2 percent stones and boulders, 10 percent cobbles, 20 percent pebbles
Depth: 0 to 4 inches
Texture: Very gravelly loam
Structure: Granular
Consistency: Soft, very friable
Reaction: Mildly alkaline
Depth: 4 to 10 inches
Texture: Very gravelly loam, extremely gravelly loam
Structure: Granular
Consistency: Soft, very friable
Reaction: Mildly alkaline
Depth: 10 inches
Material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.2 to 1.4 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1;
wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Softscraible Soil**

Classification: Pachic Argixereolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave mountain side slopes
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 6,200 to 7,800 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

**Typical Profile**

Rock fragments on surface: 2 percent stones and boulders, 10 percent pebbles
Depth: 0 to 14 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 14 to 27 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral
Depth: 27 to 60 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.2 to 7.4 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.28; T value—5;
wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

**Contrasting Inclusions**

**Inclusion 1**
Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Mountain shoulder slopes
Distinctive present vegetation: Idaho fescue, low sagebrush

**Inclusion 2**
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

**Inclusion 3**
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Adjacent to entrenched narrow mountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye, bluegrass

**Inclusion 4**
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Adjacent to narrow mountain drainageways
Distinctive present vegetation: Tufted hairgrass, iris, sedge, willow

**Major Current Uses**

Livestock grazing, wildlife habitat
Suitability for Wildlife Habitat Elements

Chad Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Gando Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Softscrabble Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Chad Soil
Range seeding: Fair—large stones, erodes easily
Roadfill: Poor—slope, shrink-swell
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—too clayey, hard to pack, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope, shrink-swell
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Gando Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Softscrabble Soil
Range seeding: Good
Roadfill: Fair—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Moderate—large stones, seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Chad soil—VIIe, nonirrigated; Gando soil—VIIIs, nonirrigated; Softscrabble soil—Vle, nonirrigated

Range site: Chad soil—024X029N; Gando soil—02BB034N; Softscrabble soil—02BB030N; Inclusion 1—02BB037N; Inclusion 2—none; Inclusion 3—02BB034N; Inclusion 4—025X005N

1450—Atlow-Stingdorn association
Positions on landscape: Foothills

Composition

Major components:
Atlow very gravelly loam, 15 to 50 percent slopes—45 percent
Atlow very gravelly loam, 8 to 15 percent slopes—20 percent
Stingdorn cobbly loam, 15 to 30 percent slopes—20 percent
Contrasting inclusions:
Colbar gravelly loam, 15 to 30 percent slopes—5 percent
Xerolic Durorthods, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—5 percent
Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 4 to 15 percent slopes—5 percent

Characteristics of the Atlow Soil, Steep
Classification: Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Convex, north- and east-facing side slopes of foothills
Parent material: Residuum derived from chert, argillite, shale, and altered tuff
Slope: 15 to 50 percent
Elevation: 5,200 to 6,100 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Black sagebrush, bluegrass, Indian ricegrass

Typical Profile
Rock fragments on surface: 40 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 14 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
**Soil and Water Features**

**Depth to bedrock:** 14 to 20 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Moderately slow

**Available water capacity:** 1.1 to 1.3 inches

**Water-supplying capacity:** 8 inches

**Runoff:** Rapid

**Hydrologic group:** D

**Erosion factors (upper layer):** $K$ value—0.17; $T$ value—1; wind erosion—is group—7

**Hazard of erosion:** By water—severe; by wind—slight

**Shrink-swell potential:** Low

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Moderate

**Characteristics of the Atlow Soil, Strongly Sloping**

**Classification:** Lithic Xerollic Hapludists, loamy-skeletal, mixed, mesic

**Positions on landscape:** Crests and shoulder slopes of foothills

**Parent material:** Residueum derived from rhyolite, tuff, and andesite

**Slope:** 5 to 15 percent

**Elevation:** 5,500 to 6,100 feet

**Average annual precipitation:** About 8 inches

**Average annual air temperature:** About 46 degrees F

**Frost-free season:** About 110 days

**Dominant present vegetation:** Black sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

**Rock fragments on surface:** 40 percent pebbles

**Depth:** 0 to 3 inches

**Texture:** Very gravely loam

**Structure:** Platy

**Consistency:** Slightly hard, very friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 3 to 14 inches

**Texture:** Very gravely clay loam

**Structure:** Angular blocky

**Consistency:** Hard, friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 14 inches

**Material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 14 to 20 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Moderately slow

**Available water capacity:** 1.1 to 1.3 inches

**Water-supplying capacity:** 8 inches

**Runoff:** Medium

**Hydrologic group:** D

**Erosion factors (upper layer):** $K$ value—0.17; $T$ value—1; wind erosion—is group—7

**Hazard of erosion:** By water—severe; by wind—slight

**Shrink-swell potential:** Low

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Moderate

**Characteristics of the Stingdorn Soil**

**Classification:** Typic Durargids, loamy-skeletal, mixed, mesic, shallow

**Positions on landscape:** The lower, south-facing side slopes of foothills

**Parent material:** Residueum derived from rhyolite, tuff, and andesite

**Slope:** 15 to 30 percent

**Elevation:** 5,200 to 6,100 feet

**Average annual precipitation:** About 8 inches

**Average annual air temperature:** About 49 degrees F

**Frost-free season:** About 110 days

**Dominant present vegetation:** Bottlebrush squirreltail, shadscale, bud sagebrush

**Typical Profile**

**Rock fragments on surface:** 20 percent cobbles, 10 percent pebbles

**Depth:** 0 to 7 inches

**Texture:** Cobbly loam

**Structure:** Platy

**Consistency:** Soft, very friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 7 to 15 inches

**Texture:** Very cobbly clay loam

**Structure:** Angular blocky

**Consistency:** Slightly hard, friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 15 to 20 inches

**Material:** Indurated hardpan

**Depth:** 20 inches

**Material:** Unweathered bedrock

**Soil and Water Features**

**Depth to the hardpan:** 8 to 20 inches

**Depth to bedrock:** 8 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.7 to 2.2 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Xerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Concave, north-facing side slopes of foothills
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush

Inclusion 2
Classification: Xerollic Durorthids, loamy-skeletal, mixed, mesic
Positions on landscape: The higher, south-facing side slopes of foothills
Distinctive present vegetation: Black sagebrush

Inclusion 3
Classification: Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Spiny hopsage, Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Atlow Soil, Steep
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Atlow Soil, Strongly Sloping
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Stingdorn Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Atlow Soil, Steep
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock, slope

Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope

Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Atlow Soil, Strongly Sloping
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones

Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Stingdorn Soil
Range seeding: Poor—droughty, too arid
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, cemented pan, large stones
Daily cover for landfill: Poor—depth to rock, large stones, slope

Shallow excavations: Severe—depth to rock, cemented pan, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Atlow and Stingdorn soils—V1Ts, nonirrigated
Range site: Allow soils—024X030N; Stingdorn soil—024X002N; Inclusion 1—024X005N; Inclusion 2—024X030N; Inclusion 3—024X020N

1600—Dumps and pits

Characteristics of the Dumps and Pits

Positions on landscape: Side slopes of hills and adjacent fan piedmonts
Description of areas: Pits and spoil from mining operations
Kind of material: Mixed fill material, residuum
Elevation: 5,200 to 7,900 feet
Lander County, Nevada, South Part

Depth to a seasonal high water table: More than 60 inches

Interpretive Groups
Land capability classification: VIII, nonirrigated
Range site: None

1670—Wieland-Allor association
Positions on landscape: Fan piedmonts

Composition
Major components:
Wieland loam, 2 to 8 percent slopes—70 percent
Allor very cobly loam, 15 to 30 percent slopes—15 percent
Contrasting inclusions:
Orovada fine sandy loam, 2 to 4 percent slopes—7 percent
Xerollic Haplargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—5 percent
Durixerollc Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—3 percent

Characteristics of the Wieland Soil
Classification: Durixerollic Haplorgids, fine, montmorillonitic, mesic
Positions on landscape: Summits of slightly dissected fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 8 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 8 inches
Texture: Loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Mildly alkaline

Depth: 8 to 20 inches
Texture: Gravelly clay
Structure: Prismatic
Consistency: Hard, firm
Reaction: Moderately alkaline

Depth: 20 to 60 inches
Texture: Gravelly loam, gravelly sandy loam
Structure: Massive
Consistence: Very hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6 to 8 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Allor Soil
Classification: Durixerollic Haplorgids, fine-loamy, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 15 to 30 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 12 inches
Texture: Very cobly loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 12 to 34 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 34 to 60 inches
Texture: Gravelly loamy sand, very gravelly loamy sand
Structure: Massive
Consistence: Very hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.7 to 6.0 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Xerolic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Narrow inset fans near the base of adjacent hills
Distinctive present vegetation: Basin big sagebrush, bluegrass

Inclusion 3
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Shoulder slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Wieland Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Allor Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Wieland Soil
Range seeding: Poor—rooting depth
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Moderate—seepage, slope
Embarkments, dikes, and levees: Moderate—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Allor Soil
Range seeding: Poor—large stones
Roadfill: Fair—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Wieland soil—Ille, irrigated, and VIs, nonirrigated; Allor soil—VIIIs, nonirrigated
Range site: Wieland and Allor soils—024X005N; Inclusion 1—024X005N; Inclusion 2—025X003N; Inclusion 3—024X020N

1680—Zineb gravelly loam, 2 to 8 percent slopes

Positions on landscape: Fan skirts

Composition

Major component:
Zineb gravelly loam, 2 to 8 percent slopes—85 percent
Contrasting inclusions:
Whirlo gravelly very fine sandy loam, 2 to 8 percent slopes—10 percent
Xerolic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—5 percent

Characteristics of the Zineb Soil

Classification: Durixerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Mixed alluvium that includes volcanic ash
Slope: 2 to 8 percent
Elevation: 5,200 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, Wyoming big sagebrush
Typical Profile

**Rock fragments on surface:** 20 percent pebbles

**Depth:** 0 to 6 inches

**Texture:** Gravelly loam

**Structure:** Platy

**Consistency:** Soft, very friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Sodicity (SAR):** 0 to 2

**Depth:** 6 to 13 inches

**Texture:** Gravelly loam, gravelly very fine sandy loam

**Structure:** Subangular blocky

**Consistency:** Slightly hard, friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Sodicity (SAR):** 0 to 2

**Depth:** 13 to 19 inches

**Texture:** Very gravelly sandy loam, very gravelly loam

**Structure:** Massive

**Consistency:** Slightly hard, friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Sodicity (SAR):** 0 to 2

**Depth:** 19 to 27 inches

**Texture:** Extremely cobbly sandy loam

**Structure:** Massive

**Consistency:** Slightly hard, friable

**Reaction:** Strongly alkaline

**Salinity:** 0 to 4 millimhos per centimeter

**Sodicity (SAR):** 0 to 5

**Depth:** 27 to 60

**Texture:** Extremely cobbly coarse sand, extremely cobbly loamy coarse sand

**Structure:** Massive

**Consistency:** Slightly hard, friable

**Reaction:** Strongly alkaline

**Salinity:** 0 to 4 millimhos per centimeter

**Sodicity (SAR):** 0 to 5

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Moderate over rapid

**Available water capacity:** 2.0 to 3.4 inches

**Water-supplying capacity:** 8 inches

**Runoff:** Medium

**Hydrologic group:** B

**Erosion factors (upper layer):** K value—0.32; T value—5; wind erodibility group—6

**Hazard of erosion:** By water—slight; by wind—slight

**Shrink-swell potential:** Low

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Moderate

### Contrasting Inclusions

**Inclusion 1**

**Classification:** Typic Camborthids, loamy-skeletal, mixed, mesic

**Positions on landscape:** The lower areas of fan skirts

**Distinctive present vegetation:** Shadscale, bud sagebrush

**Inclusion 2**

**Classification:** Xerolic Camborthids, loamy-skeletal, mixed, mesic

**Positions on landscape:** Inset fans

**Distinctive present vegetation:** Wyoming big sagebrush

### Major Current Uses

Livestock grazing, wildlife habitat

### Suitability for Wildlife Habitat Elements

**Wild herbaceous plants (nonirrigated):** Fair

**Shrubs (nonirrigated):** Fair

### Suitability and Limitations for Selected Uses

**Range seeding:** Poor—droughty

**Roadfill:** Fair—large stones

**Topsoil:** Poor—small stones, area reclaim

**Daily cover for landfills:** Poor—too sandy, small stones

**Shallow excavations:** Severe—cutbanks cave

**Local roads and streets:** Moderate—frost action, large stones

**Pond reservoir areas:** Severe—seepage

**Embankments, dikes, and levees:** Severe—large stones

**Sand:** Improbable source—large stones

**Gravel:** Improbable source—large stones

### Interpretive Groups

**Land capability classification:** Zineb soil—IVe, irrigated, and VIIa, nonirrigated

**Range site:** Zineb soil—024X005N; Inclusion 1—024X002N; Inclusion 2—024X005N

1681—Zineb-Chiara-Wieland association

**Positions on landscape:** Fan piedmonts, fan skirts

### Composition

**Major components:**

Zineb gravelly loam, 2 to 4 percent slopes—35 percent

Chiara gravelly loam, 2 to 8 percent slopes—35 percent

Wieland gravelly loam, 2 to 4 percent slopes—20 percent

**Contrasting inclusions:**

Cumulic Haploxerolls, fine-loamy, mixed, mesic, 0 to 2 percent slopes—5 percent
Xerolic Camborthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—5 percent

**Characteristics of the Zineb Soil**

*Classification*: Durixerolic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape*: Fan skirts  
*Parent material*: Mixed alluvium that includes volcanic ash  
*Slope*: 2 to 4 percent  
*Elevation*: 5,500 to 6,500 feet  
*Average annual precipitation*: About 9 inches  
*Average annual air temperature*: About 47 degrees F  
*Frost-free season*: About 110 days  
*Dominant present vegetation*: Bluegrass, Indian ricegrass, Wyoming big sagebrush  

**Typical Profile**

*Rock fragments on surface*: 20 percent pebbles  
*Depth*: 0 to 6 inches  
*Texture*: Gravelly loam  
*Structure*: Platy  
*Consistence*: Soft, very friable  
*Reaction*: Moderately alkaline  
*Salinity*: 0 to 2 millimhos per centimeter  
*Sodicity (SAR)*: 0 to 2  
*Depth*: 6 to 13 inches  
*Texture*: Gravelly loam, gravelly very fine sandy loam  
*Structure*: Subangular blocky  
*Consistence*: Slightly hard, friable  
*Reaction*: Moderately alkaline  
*Salinity*: 0 to 2 millimhos per centimeter  
*Sodicity (SAR)*: 0 to 2  
*Depth*: 13 to 19 inches  
*Texture*: Very gravelly sandy loam, very gravelly loam  
*Structure*: Massive  
*Consistence*: Slightly hard, friable  
*Reaction*: Moderately alkaline  
*Salinity*: 0 to 2 millimhos per centimeter  
*Sodicity (SAR)*: 0 to 2  
*Depth*: 19 to 27 inches  
*Texture*: Extremely cobbly sandy loam  
*Structure*: Massive  
*Consistence*: Slightly hard, friable  
*Reaction*: Strongly alkaline  
*Salinity*: 0 to 4 millimhos per centimeter  
*Sodicity (SAR)*: 0 to 5  
*Depth*: 27 to 60  
*Texture*: Extremely cobbly coarse sand, extremely cobbly loamy coarse sand  
*Structure*: Massive  
*Consistence*: Slightly hard, friable  
*Reaction*: Strongly alkaline  
*Salinity*: 0 to 4 millimhos per centimeter  
*Sodicity (SAR)*: 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table*: More than 60 inches  
*Frequency of flooding*: None  
*Permeability*: Moderate over rapid  
*Available water capacity*: 2.0 to 3.4 inches  
*Water-supplying capacity*: 8 inches  
*Runoff*: Medium  
*Hydrologic group*: B  
*Erosion factors (upper layer)*: K value—0.32; T value—5; wind erodibility group—6  
*Hazard of erosion*: By water—slight; by wind—slight  
*Shrink-swell potential*: Low  
*Corrosivity*: To steel—high; to concrete—low  
*Potential for frost action*: Moderate

**Characteristics of the Chiara Soil**

*Classification*: Xerolic Durorthids, loamy, mixed, mesic, shallow  
*Positions on landscape*: The higher summits of fan piedmont remnants  
*Parent material*: Loess mantle that is high in content of volcanic ash over mixed alluvium  
*Slope*: 2 to 8 percent  
*Elevation*: 5,500 to 6,500 feet  
*Average annual precipitation*: About 9 inches  
*Average annual air temperature*: About 47 degrees F  
*Frost-free season*: About 110 days  
*Dominant present vegetation*: Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

*Depth*: 0 to 4 inches  
*Texture*: Gravelly loam  
*Structure*: Platy  
*Consistence*: Soft, very friable  
*Reaction*: Moderately alkaline  
*Salinity*: 0 to 2 millimhos per centimeter  
*Sodicity (SAR)*: 0 to 2  
*Depth*: 4 to 13 inches  
*Texture*: Silt loam, loam  
*Structure*: Subangular blocky  
*Consistence*: Slightly hard, friable  
*Reaction*: Moderately alkaline  
*Salinity*: 0 to 2 millimhos per centimeter  
*Sodicity (SAR)*: 0 to 2  
*Depth*: 13 inches  
*Material*: Indurated hardpan  
*Structure*: Massive  
*Consistence*: Extremely hard, extremely firm
Soil and Water Features

Depth to the hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.3 to 2.7 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Wieland Soil

Classification: Durixerolic Haplargids, fine, montmorillonitic, mesic
Positions on landscape: The lower summits of fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 4 percent
Elevation: 5,500 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 20 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 5 to 26 inches
Texture: Gravelly clay, clay
Structure: Prismatic
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 26 to 52 inches
Texture: Gravelly clay loam, gravelly sandy clay loam
Structure: Massive
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 5.5 to 9.0 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.32; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Cumulic Haploxerolls, fine-loamy, mixed, mesic
Positions on landscape: The upper inset fans
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 2
Classification: Xerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The lower inset fans
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Zineb Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Chiara Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Wieland Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Suitability and Limitations for Selected Uses

**Zineb Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Fair—large stones  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—too sandy, small stones  
*Shallow excavations:* Severe—cutbanks cave  
*Local roads and streets:* Moderate—frost action, large stones  
*Pond reservoir areas:* Severe—seepage  
*Embankments, dikes, and levees:* Severe—large stones  
*Sand:* Improbable source—large stones  
*Gravel:* Improbable source—large stones

**Chiara Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—cemented pan  
*Topsoil:* Poor—cemented pan  
*Daily cover for landfill:* Poor—cemented pan  
*Shallow excavations:* Severe—cemented pan  
*Local roads and streets:* Severe—cemented pan  
*Pond reservoir areas:* Severe—cemented pan  
*Embankments, dikes, and levees:* Severe—piping  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

**Wieland Soil**

*Range seeding:* Poor—rooting depth  
*Roadfill:* Good  
*Topsoil:* Poor—small stones, area reclaim  
*Daily cover for landfill:* Poor—small stones  
*Shallow excavations:* Moderate—too clayey  
*Local roads and streets:* Severe—low strength, shrink-swell  
*Pond reservoir areas:* Moderate—seepage, slope  
*Embankments, dikes, and levees:* Moderate—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Zineb and Chiara soils—1Ve, irrigated, and VILs, nonirrigated; Wieland soil—IIe, irrigated, and VILs, nonirrigated  
*Range site:* Zineb, Chiara, and Wieland soils—024X005N; Inclusion 1—025X003N; Inclusion 2—024X020N

1682—Zineb-Orovada association

**Positions on landscape:** Piedmont slopes

**Composition**

*Major components:*  
Zineb very gravelly sandy loam, 2 to 4 percent slopes—55 percent  
Orovada gravelly fine sandy loam, 2 to 4 percent slopes—30 percent  
Contrasting inclusions: Durixerolic Camborthids, coarse-loamy, mixed, mesic, 0 to 2 percent slopes—8 percent  
Pineval gravelly loam, 0 to 2 percent slopes—4 percent  
Orovada very gravelly sandy loam, 4 to 8 percent slopes—3 percent

**Characteristics of the Zineb Soil**

*Classification:* Durixerolic Camborthids, loamy-skeletal, mixed, mesic  
*Positions on landscape:* Inset fans and fan skirts near fan drainageways  
*Parent material:* Mixed alluvium that includes volcanic ash  
*Slope:* 2 to 4 percent  
*Elevation:* 5,700 to 5,900 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Indian ricegrass, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 20 percent pebbles  
*Depth:* 0 to 6 inches  
*Texture:* Very gravelly sandy loam  
*Structure:* Platy  
*Consistence:* Soft, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 6 to 13 inches  
*Texture:* Gravelly loam, gravelly very fine sandy loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 13 to 19 inches  
*Texture:* Very gravelly sandy loam, very gravelly loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Sodicity (SAR):* 0 to 2  
*Depth:* 19 to 27 inches  
*Texture:* Extremely cobbly sandy loam  
*Structure:* Massive  
*Consistence:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 27 to 60 inches
Texture: Extremely cobbly coarse sand, extremely cobbly loamy coarse sand
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate over rapid
Available water capacity: 2.0 to 3.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Orovada Soil
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Summits of fan skirts
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,700 to 5,900 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Gravelly fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.2 to 9.4 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Narrow inset fans near the front of mountains
Distinctive present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye

Inclusion 2
Classification: Durixerollic Haplorgids, loamy-skeletal, mixed, mesic
Positions on landscape: Nonburied fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan aprons closest to the front of mountains
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Zineb Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Zineb Soil
Range seeding: Poor—small stones, drouthy
Roadfill: Fair—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, large stones
Pond reservoir areas: Severe—seepage
Embarkments, dikes, and levees: Severe—large stones
Sand: Improbable source—large stones
Gravel: Improbable source—large stones

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embarkments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Zineb soil—VIIa, nonirrigated; Orovada soil—Ile, irrigated, and Vlc, nonirrigated
Range site: Zineb and Orovada soils—028B010N;
Inclusion 1—028B003N; Inclusions 2 and 3—
028B010N

2003—Unius-Orovada association
Positions on landscape: Fan piedmonts
Composition
Major components:
Unius gravelly silt loam, 2 to 8 percent slopes—70 percent
Orovada fine sandy loam, 2 to 8 percent slopes—15 percent
Contrasting inclusions:
Xerollic Haplalgids, fine-loamy, mixed, mesic, 2 to 4 percent slopes—9 percent
Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, flooded, 0 to 4 percent slopes—3 percent
Haploxerolic Nadurargids, fine, montmorillonitic, mesic, 2 to 8 percent slopes—3 percent

Characteristics of the Unius Soil
Classification: Haploxerolic Durorthids, loamy, mixed, mesic, shallow
Positions on landscape: Summits of fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 8 percent
Elevation: 6,700 to 7,100 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needlegrass, black sagebrush

Typical Profile
Rock fragments on surface: 50 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly silt loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 4 to 12 inches
Texture: Silt loam, loam, gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 12 to 44 inches
Material: Cemented hardpan
Structure: Massive
Consistence: Very hard, very firm
Depth: 44 to 60 inches
Texture: Gravelly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features
Depth to the hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.8 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.28; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Orovada Soil

Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 8 percent
Elevation: 6,700 to 7,100 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 8 to 26 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 26 to 61 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 5

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 9 to 11 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B

Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Xerolic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Active inset fans, adjacent to channels
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Classification: Haploxerolic Nadurargids, fine, montmorillonitic, mesic
Positions on landscape: Nonburied fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Unius Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Unius Soil
Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Orovada Soil

Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action, flooding
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Unius soil—VII, nonirrigated; Orovada soil—IIe, irrigated, and VIIc, nonirrigated

Range site: Unius soil—028B011N; Orovada soil—028B010N; Inclusion 1—028B010N; Inclusion 2—028B009N; Inclusion 3—028B017N

2010—Glyphs-Silverado association

Positions on landscape: Fan piedmonts

Composition

Major components:
Glyphs fine sandy loam, 2 to 4 percent slopes—55 percent
Silverado gravelly sandy loam, 2 to 8 percent slopes—30 percent
Contrasting inclusions:
Xerolic Camborthids, fine-loamy, mixed, frigid. 2 to 4 percent slopes—7 percent
Muni fine sandy loam, 2 to 4 percent slopes—6 percent
Jesse Camp silt loam, occasionally flooded, 0 to 2 percent slopes—2 percent

Characteristics of the Glyphs Soil

Classification: Durixerolic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Broad, slightly dissected fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 4 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

 Typical Profile
Depth: 0 to 7 inches
Texture: Fine sandy loam

Structure: Platy
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 7 to 17 inches
Texture: Gravelly clay loam, gravelly sandy clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 17 to 37 inches
Texture: Gravelly sandy loam
Structure: Massive
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 37 to 60 inches
Texture: Very gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow over very rapid
Available water capacity: 4.8 to 6.7 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Silverado Soil

Classification: Durixerolic Camborthids, coarse-loamy, mixed, frigid
Positions on landscape: Inset fan remnants
Parent material: Mixed alluvium that includes volcanic ash
Slope: 2 to 8 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 25 percent pebbles
Depth: 0 to 2 inches
Texture: Gravelly sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 2 to 19 inches
Texture: Sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 19 to 38 inches
Texture: Sandy loam, gravelly sandy loam
Structure: Massive
Consistency: Hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 38 to 60 inches
Texture: Very gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.4 to 5.6 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.15; T value—3; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Xerollic Camborthids, fine-loamy, mixed, frigid

Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Haploxerollic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: The highest part of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Xerollic Camborthids, fine-silty, mixed, frigid
Positions on landscape: Adjacent to intermittent stream channels
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Glyphs Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Silverado Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Glyphs Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Silverado Soil
Range seeding: Fair—too arid, small stones
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source
Interpretive Groups

Land capability classification: Glyphs soil—Ille, irrigated, and Vlc, nonirrigated; Silverado soil—IVe, irrigated, and Vllc, nonirrigated
Range site: Glyphs and Silverado soils—028B010N; Inclusions 1 and 2—028B010N, Inclusion 3—028B009N

2011—Glyphs-Muni association

Positions on landscape: Fan piedmonts

Composition

Major components:
Glyphs fine sandy loam, 2 to 8 percent slopes—50 percent
Muni fine sandy loam, 2 to 4 percent slopes—35 percent

Contrasting inclusions:
Durixerollic Camborthids, fine-loamy, mixed, mesic, 0 to 4 percent slopes—8 percent
Aquic Argixerolls, fine-loamy, mixed, mesic, 0 to 2 percent slopes—3 percent
Grassval gravelly fine sandy loam, 2 to 4 percent slopes—3 percent
Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic, 0 to 2 percent slopes—1 percent

Characteristics of the Glyphs Soil

Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Convex side slopes of fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 8 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

Typical Profile

Depth: 0 to 7 inches
Texture: Fine sandy loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 7 to 17 inches
Texture: Gravelly clay loam, gravelly sandy clay loam
Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 17 to 37 inches
Texture: Gravelly sandy loam
Structure: Massive
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 37 to 60 inches
Texture: Very gravelly coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow over moderately rapid
Available water capacity: 4.8 to 6.7 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Muni Soil

Classification: Haploxerollic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: Dissected, convex summits and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 4 percent
Elevation: 6,300 to 7,300 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Needlegrass, bluegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 30 percent pebbles
Depth: 0 to 3 inches
Texture: Fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 3 to 18 inches
Texture: Sandy clay loam, clay loam, loam
Structure: Prismatic
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 18 to 49 inches
Material: Cemented hardpan
Depth: 49 to 60 inches
Texture: Very gravelly loamy sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.7 to 3.5 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 3
Classification: Xerollic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: The highest part of fan piedmont remnants
Distinctive present vegetation: Indian ricegrass, black sagebrush

Inclusion 4
Classification: Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic
Positions on landscape: Near springs and intermittent stream channels
Distinctive present vegetation: Rush, sedge, bluegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Glyphs Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Muni Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Glyphs Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Muni Soil
Range seeding: Fair—too arid, droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, area reclaim
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan
Embarkments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Interpretive Groups

Land capability classification: Glyphs soil—Ille, irrigated, and Vilc, nonirrigated; Muni soil—Ille, irrigated, and Vilc, nonirrigated
Range site: Glyphs and Muni soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B003N; Inclusion 3—028B011N; Inclusion 4—028B001N

2012—Glyphs-Muni-Orovada association

Positions on landscape: Fan piedmonts

Composition

Major components:
Glyphs fine sandy loam, 2 to 8 percent slopes—40 percent
Muni fine sandy loam, 2 to 4 percent slopes—30 percent
Orovada fine sandy loam, gravelly substratum, 0 to 2 percent slopes—15 percent
Contrasting inclusions:
Durixerollic Camborthids, coarse-loamy, mixed, mesic, 4 to 15 percent slopes—9 percent
Durorthid Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 2 to 8 percent slopes—6 percent

Characteristics of the Glyphs Soil

Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: The lower part of fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 8 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 40 percent pebbles
Depth: 0 to 7 inches
Texture: Fine sandy loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Mide alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 7 to 17 inches

Texture: Gravelly clay loam, gravelly sandy clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 17 to 37 inches
Texture: Gravelly sandy loam
Structure: Massive
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 37 to 60 inches
Texture: Very gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Sodicity (SAR): 2 to 10 millimhos per centimeter

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow over very rapid
Available water capacity: 4.8 to 6.7 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Muni Soil

Classification: Haploxerollic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: The upper part of fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 4 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Needlegrass, bluegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 30 percent pebbles
Depth: 0 to 3 inches
Texture: Fine sandy loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 18 inches
Texture: Sandy clay loam, clay loam, loam
Structure: Prismatic
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 18 to 49 inches
Material: Cemented hardpan
Depth: 49 to 60 inches
Texture: Very gravelly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.7 to 3.5 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Orovada Soil
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 0 to 2 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Depth: 5 to 15 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 15 to 40 inches
Texture: Fine sandy loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 40 to 60 inches
Texture: Stratified gravelly sandy loam to very gravelly sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 7 to 9 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.37; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: 28 Moderate

Contrasting Inclusions
Inclusion 1
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan aprons
Distinctive present vegetation: Small rabbitbrush, horsebrush
Inclusion 2
Classification: Durorthidic Xeric Torriorthents, coarse-loamy, mixed (calcereous), mesic
Positions on landscape: Adjacent to channels
Distinctive present vegetation: Basin big sagebrush, basin wildrye
Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Glyphs Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Muni Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Glyphs Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Muni Soil
Range seeding: Fair—too arid, droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, area reclaim
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—area reclaim
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Probable source
Gravel: Improbable source—too sandy

Interpretive Groups
Land capability classification: Glyphs soil—Ille, irrigated, and Vlc, nonirrigated; Muni soil—IVe, irrigated, and VIIa, nonirrigated; Orovada soil—Illc, irrigated, and Vlc, nonirrigated
Range site: Glyphs, Muni, and Orovada soils—02BB010N; Inclusion 1—025X025N; Inclusion 2—028B003N

2015—Glyphs-Enko association
Positions on landscape: Fan piedmonts

Composition
Major components:
Glyphs fine sandy loam, 2 to 4 percent slopes—40 percent
Glyphs fine sandy loam, 15 to 30 percent slopes—25 percent
Enko gravelly loamy sand, 2 to 4 percent slopes—20 percent
Contrasting inclusions:
Orovada fine sandy loam, 2 to 8 percent slopes—6 percent
Durixerollic Hapludalfs, fine, montmorillonitic, mesic, 0 to 2 percent slopes—5 percent
Xerolic Camborthids, coarse-loamy, mixed, mesic, 15 to 30 percent slopes—4 percent

Characteristics of the Glyphs Soil, Gently Sloping
Classification: Durixerollic Hapludalfs, fine-loamy, mixed, mesic
Positions on landscape: Summits of fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 4 percent
Elevation: 6,000 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

Typical Profile
Depth: 0 to 7 inches
Texture: Fine sandy loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 7 to 17 inches
Texture: Gravelly clay loam, gravelly sandy clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 17 to 37 inches
Texture: Gravelly sandy loam
Structure: Massive
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10

Depth: 37 to 60 inches
Texture: Very gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow over very rapid

*Available water capacity:* 4.8 to 6.7 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—3

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Glyphs Soil, Moderately Steep**

*Classification:* Durixerolic Haplargids, fine-loamy, mixed, mesic

*Positions on landscape:* The upper side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 15 to 30 percent

*Elevation:* 6,000 to 6,200 feet

*Average annual precipitation:* About 9 inches

*Average annual air temperature:* About 47 degrees F

*Frost-free season:* About 100 days

*Dominant present vegetation:* Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

**Typical Profile**

*Depth:* 0 to 7 inches

*Texture:* Fine sandy loam

*Structure:* Platy

*Consistency:* Slightly hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 17 inches

*Texture:* Gravelly clay loam, gravelly sandy clay loam

*Structure:* Angular blocky

*Consistency:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 17 to 37 inches

*Texture:* Gravelly sandy loam

*Structure:* Massive

*Consistency:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 37 to 60 inches

*Texture:* Very gravelly coarse sand

*Structure:* Single grain

*Consistency:* Loose

*Reaction:* Moderately alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow over very rapid

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Slow

*Hydrologic group:* B

*Erosion factors (upper layer):* K value—0.28; T value—3; wind erodibility group—3

*Hazard of erosion:* By water—moderate; by wind—severe

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Enko Soil**

*Classification:* Durixerolic Camborthids, coarse-loamy, mixed, mesic

*Positions on landscape:* Fan aprons, the higher inset fans
Parent material: Mixed alluvium that includes some loess and volcanic ash
Slope: 2 to 4 percent
Elevation: 5,600 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly loamy sand
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 4 to 18 inches
Texture: Loam, sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 18 to 60 inches
Texture: Sandy loam, loam, fine sandy loam
Structure: Massive
Consistence: Hard, firm
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.1 to 8.2 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.20; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic

Positions on landscape: The lower inset fans
Distinctive present vegetation: Bluegrass, Wyoming big sagebrush

Inclusion 2
Classification: Durixerolic Haplargids, fine, montmorillonitic, mesic
Positions on landscape: The upper summits of fan piedmont remnants
Distinctive present vegetation: Bluegrass, Wyoming big sagebrush

Inclusion 3
Classification: Xerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The lower side slopes of fan piedmont remnants
Distinctive present vegetation: Needleandthread, Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Glyphs Soil, Gently Sloping
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Glyphs Soil, Moderately Steep
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Enko Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Glyphs Soil, Gently Sloping
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Glyphs Soil, Moderately Steep
Range seeding: Fair—too arid
Roadfill: Fair—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope  
Embarkments, dikes, and levees: Severe—seepage  

Sand: Probable source  
Gravel: Probable source  

Enko Soil  
Range seeding: Fair—too arid  
Roadfill: Good  
Topsoil: Fair—small stones  
Daily cover for landfill: Good  
Shallow excavations: Slight  
Local roads and streets: Moderate—frost action  
Pond reservoir areas: Moderate—slope  
Embarkments, dikes, and levees: Severe—piping  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines  

Interpretive Groups  
Land capability classification: Glyphs soil, gently sloping—Ille, irrigated, and Vlc, nonirrigated; Glyphs soil, moderately steep—Vle, nonirrigated; Enko soil—Ille, irrigated, and Vls, nonirrigated  
Range site: Glyphs soils—02BB010N; Enko soil—024X017N; Inclusions 1 and 2—028B010N; Inclusion 3—028B005N  

2021—Rotinom-Wholan association  
Positions on landscape: Stream terraces, inset fans  

Composition  
Major components:  
Rotinom silt loam, 0 to 2 percent slopes—50 percent  
Wholan very fine sandy loam, 0 to 2 percent slopes—20 percent  
Wholan very fine sandy loam, alkaline, 0 to 2 percent slopes—15 percent  
Contrasting inclusions:  
Durixerollic Camborthids, fine-loamy, mixed, mesic, gullied, 0 to 4 percent slopes—5 percent  
Xerollic Camborthids, coarse-loamy, mixed, mesic, gullied, 0 to 4 percent slopes—5 percent  
Orovada very fine sandy loam, 0 to 4 percent slopes—5 percent  

Characteristics of the Rotinom Soil  
Classification: Durorthidic Torrifluvents, fine-silty, mixed (calcareous), mesic  
Positions on landscape: Stream terraces  
Parent material: Loess and mixed alluvium that includes volcanic ash  
Slope: 0 to 2 percent  
Elevation: 6,400 to 6,700 feet  
Average annual precipitation: About 8 inches  
Average annual air temperature: About 45 degrees F  

Frost-free season: About 100 days  
Dominant present vegetation: Indian ricegrass, shadscale, bud sagebrush  

Typical Profile  
Depth: 0 to 9 inches  
Texture: Silt loam  
Structure: Platy  
Consistency: Slightly hard, friable  
Reaction: Moderately alkaline  
Salinity: 0 to 4 millimhos per centimeter  
Sodicity (SAR): 0 to 5  
Depth: 9 to 60 inches  
Texture: Silt loam  
Structure: Subangular blocky  
Consistency: Slightly hard, friable  
Reaction: Moderately alkaline  
Salinity: 0 to 4 millimhos per centimeter  
Sodicity (SAR): 5 to 20  

Soil and Water Features  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: Occasional for brief periods in November through April  
Permeability: Moderately slow  
Available water capacity: 10 to 11 inches  
Water-supplying capacity: 8 inches  
Runoff: Slow  
Hydrologic group: B  
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—4L  
Hazard of erosion: By water—slight; by wind—severe  
Shrink-swell potential: Moderate  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Low  

Characteristics of the Wholan Soil  
Classification: Typic Camborthids, coarse-silty, mixed, mesic  
Positions on landscape: The lower parts of inset fans adjacent to stream terraces  
Parent material: Loess mantle over silty alluvium  
Slope: 0 to 2 percent  
Elevation: 6,400 to 6,700 feet  
Average annual precipitation: About 8 inches  
Average annual air temperature: About 49 degrees F  
Frost-free season: About 120 days  
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, bluegrass, winterfat  

Typical Profile  
Depth: 0 to 6 inches  
Texture: Very fine sandy loam  
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Muddy alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 6 to 60 inches
Texture: Silt loam, very fine sandy loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Muddy alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60
inches
Frequency of flooding: Occasional for very brief periods
in December through April
Permeability: Moderate
Available water capacity: 9 to 11 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5;
winter erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Wholan Soil, Alkaline
Classification: Typic Camborthids, coarse-silty, mixed,
mesic
Positions on landscape: The higher parts of inset fans
adjacent to stream terraces
Parent material: Loess mantle over silty alluvium
Slope: 0 to 2 percent
Elevation: 6,400 to 6,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass,
bottlebrush squirreltail, sickle saltbush

Typical Profile
Depth: 0 to 6 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Muddy alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 6 to 60 inches
Texture: Silt loam, very fine sandy loam
Structure: Massive

Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60
inches
Frequency of flooding: Occasional for very brief periods
in December through April
Permeability: Moderate
Available water capacity: 9 to 11 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5;
winter erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Camborthids, fine-loamy,
mixed, mesic
Positions on landscape: Slightly convex stream terraces
Distinctive present vegetation: Wyoming big sagebrush,
basin wildrye

Inclusion 2
Classification: Xerollic Camborthids, coarse-loamy,
mixed, mesic
Positions on landscape: Linear channel banks
Distinctive present vegetation: Basin wildrye, basin big
sagebrush

Inclusion 3
Classification: Durixerollic Camborthids, coarse-loamy,
mixed, mesic
Positions on landscape: Fan aprons
Distinctive present vegetation: Needleandthread,
Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Rotinom Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Wholan Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Wholan Soil, Alkaline
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Rotinom Soil
Range seeding: Poor—too arid
Roadfill: Fair—low strength, shrink-swell
Topsoil: Good
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Wholan Soil
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Wholan Soil, Alkaline
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Rotinom soil—I11w, irrigated, and VIIw, nonirrigated; Wholan and Wholan, alkaline, soils—I11w, irrigated, and VIIw, nonirrigated
Range site: Rotinom soil—028B017N; Wholan soil—028B013N; Wholan soil, alkaline—024X012N; Inclusion 1—028B003N; Inclusion 2—028B009N; Inclusion 3—028B010N

Orovada very fine sandy loam, rarely flooded, 0 to 2 percent slopes—35 percent
Contrasting inclusions:
Orovada gravelly fine sandy loam, gravelly substratum, 0 to 2 percent slopes—5 percent
Rotinom silt loam, frequently flooded, 0 to 4 percent slopes—5 percent
Enko sandy loam, 0 to 2 percent slopes—5 percent

Characteristics of the Rotinom Soil
Classification: Durorthidic Torrifuvents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Stream terraces
Parent material: Loess and mixed alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 6,200 to 6,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, shadscale, bud sagebrush

Typical Profile
Depth: 0 to 9 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 9 to 60 inches
Texture: Silt loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 5 to 20

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Occasional for brief periods in November through April
Permeability: Moderately slow
Available water capacity: 10 to 11 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

2022—Rotinom-Orovada association
Positions on landscape: Stream terraces, fan skirts

Composition
Major components:
Rotinom silt loam, 0 to 2 percent slopes—50 percent
Characteristics of the Orovada Soil

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic

Positions on landscape: Fan skirts adjacent to stream terraces

Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium

Slope: 0 to 2 percent

Elevation: 6,200 to 6,700 feet

Average annual precipitation: About 8 inches

Average annual air temperature: About 48 degrees F

Frost-free season: About 110 days

Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

Depth: 0 to 8 inches

Texture: Very fine sandy loam

Structure: Subangular blocky

Consistence: Slightly hard, very friable

Reaction: Neutral

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches

Texture: Fine sandy loam, loam

Structure: Subangular blocky

Consistence: Slightly hard, very friable

Reaction: Mildly alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 5

Depth: 20 to 65 inches

Texture: Stratified fine sandy loam to silt loam

Structure: Massive

Consistence: Slightly hard, friable

Reaction: Moderately alkaline

Salinity: 4 to 8 millimhos per centimeter

Sodicity (SAR): 0 to 5

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: Rare

Permeability: Moderate

Available water capacity: 9 to 10 inches

Water-supplying capacity: 8 inches

Runoff: Slow

Hydrologic group: B

Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—3

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic

Positions on landscape: Fan skirts over gravel bars

Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2

Classification: Durorthidic Torrifuvents, fine-silty, mixed (calcareous), mesic

Positions on landscape: Channel bank margins

Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 3

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic

Positions on landscape: Fan skirts adjacent to fan piedmonts

Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Rotinom Soil

Wild herbaceous plants (nonirrigated): Poor

Shrubs (nonirrigated): Poor

Orovada Soil

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Rotinom Soil

Range seeding: Poor—too arid

Roadfill: Fair—low strength, shrink-swell

Topsoil: Good

Daily cover for landfill: Good

Shallow excavations: Moderate—flooding

Local roads and streets: Severe—flooding

Pond reservoir areas: Slight

Embankments, dikes, and levees: Severe—piping

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Orovada Soil

Range seeding: Fair—too arid

Roadfill: Good

Topsoil: Fair—small stones, thin layer

Daily cover for landfill: Good

Shallow excavations: Slight

Local roads and streets: Moderate—frost action, flooding

Pond reservoir areas: Moderate—seepage

Embankments, dikes, and levees: Severe—piping

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines
Interpretive Groups

Land capability classification: Rotinom soil—IIIw, irrigated, and VIIw, nonirrigated; Orovada soil—IIc, irrigated, and Vlc, nonirrigated

Range site: Rotinom soil—028B017N; Orovada soil—028B010N; Inclusion 1—028B010N; Inclusion 2—028B009N; Inclusion 3—028B010N

2031—Muni-Orovada-Unius association

Positions on landscape: Fan piedmonts

Composition

Major components:
- Muni fine sandy loam, 2 to 8 percent slopes—45 percent
- Orovada fine sandy loam, gravelly substratum, 2 to 4 percent slopes—30 percent
- Unius gravelly silt loam, 4 to 15 percent slopes—10 percent

Contrasting inclusions:
- Deftor sandy loam, 0 to 4 percent slopes—8 percent
- Durixerollic Camborthids, sandy-skeletal, mixed, mesic, 4 to 15 percent slopes—5 percent
- Durixerollic Camborthids, coarse-loamy, mixed, mesic, 0 to 4 percent slopes—2 percent

Characteristics of the Muni Soil

Classification: Hapixerollic Durargids, loamy, mixed, mesic, shallow

Positions on landscape: Summits of fan piedmont remnants

Parent material: Mixed alluvium that includes loess and volcanic ash

Slope: 2 to 8 percent

Elevation: 6,500 to 6,800 feet

Average annual precipitation: About 10 inches

Average annual air temperature: About 45 degrees F

Frost-free season: About 100 days

Dominant present vegetation: Needlegrass, bluegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 50 percent pebbles

Depth: 0 to 3 inches

Texture: Fine sandy loam

Structure: Platy

Consistence: Soft, very friable

Reaction: Neutral

Depth: 3 to 15 inches

Texture: Sandy clay loam, clay loam, loam

Structure: Prismatic

Consistence: Slightly hard, very friable

Reaction: Mildly alkaline

Depth: 18 to 49 inches

Material: Cemented hardpan

Depth: 49 to 60 inches

Texture: Very gravelly loamy sand

Structure: Single grain

Consistence: Loose

Reaction: Strongly alkaline

Soil and Water Features

Depth to the hardpan: 14 to 20 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderately slow

Available water capacity: 3.3 to 4.0 inches

Water-supplying capacity: 9 inches

Runoff: Medium

Hydrologic group: D

Erosion factors (upper layer): K value—0.32; T value—1; wind erodibility group—3

Hazard of erosion: By water—slight; by wind—severe

Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Moderate

Characteristics of the Orovada Soil

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic

Positions on landscape: Inset fans

Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium

Slope: 2 to 4 percent

Elevation: 6,500 to 6,800 feet

Average annual precipitation: About 10 inches

Average annual air temperature: About 48 degrees F

Frost-free season: About 110 days

Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

Depth: 0 to 5 inches

Texture: Fine sandy loam

Structure: Subangular blocky

Consistence: Slightly hard, very friable

Reaction: Neutral

Salinity: 0 to 2 millimhos per centimeter

Depth: 5 to 15 inches

Texture: Fine sandy loam, loam

Structure: Subangular blocky

Consistence: Slightly hard, very friable

Reaction: Mildly alkaline

Salinity: 0 to 2 millimhos per centimeter
Depth: 15 to 40 inches
Texture: Fine sandy loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 40 to 60 inches
Texture: Stratified gravelly sandy loam to very gravelly sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches

Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.4 to 6.6 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.37; T value—5
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Unius Soil**

Classification: Haploxerollic Durorthids, loamy, mixed, mesic, shallow
Positions on landscape: Summits near scarp breaks and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 4 to 15 percent
Elevation: 6,500 to 6,800 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needlegrass, black sagebrush

**Typical Profile**

Rock fragments on surface: 50 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly silt loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 4 to 12 inches
Texture: Silt loam, loam, gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 12 to 44 inches
Material: Cemented hardpan
Structure: Massive
Consistency: Very hard, very firm
Depth: 44 to 60 inches
Texture: Gravelly loamy sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter

**Soil and Water Features**

**Depth to the hardpan:** 10 to 20 inches
**Depth to a seasonal high water table:** More than 60 inches

Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.28; T value—1
wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Contrasting Inclusions**

**Inclusion 1**

Classification: Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Adjacent to fan skirts and fan aprons
Distinctive present vegetation: Indian ricegrass, winterfat

**Inclusion 2**

Classification: Durixerollic Camborthids, sandy-skeletal, mixed, mesic
Positions on landscape: South-facing side slopes of fan piedmont remnants
Distinctive present vegetation: Galleta, shadscale

**Inclusion 3**

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Areas adjacent to channels
Distinctive present vegetation: Needleandthread, Wyoming big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Muni Soil**

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Orovada Soil**

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Unius Soil**

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Muni Soil**

Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, area reclaim
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Orovada Soil**

Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—area reclaim
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Probable source
Gravel: Improbable source—too sandy

**Unius Soil**

Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan, slope, seepage
Embankments, dikes, and levees: Severe—seepage

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**

Land capability classification: Muni soil—IVe, irrigated, and VII, nonirrigated; Orovada soil—IVc, nonirrigated; Unius soil—VII, nonirrigated
Range site: Muni and Orovada soils—028B010N; Unius soil—028B011N; Inclusion 1—028B013N; Inclusion 2—024X045N; Inclusion 3—028B005N

**2060—Oxcorel-Beoska-Whirlo association**

Positions on landscape: Fan piedments

**Composition**

Major components:
Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—40 percent
Beoska silt loam, 0 to 4 percent slopes—30 percent
Whirlo gravelly loam, 2 to 8 percent slopes—15 percent
Contrasting inclusions:
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—5 percent
Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 8 percent slopes—5 percent
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent

**Characteristics of the Oxcorel Soil**

Classification: Duric Natrargids, fine, montmorillonitic, mesic
Positions on landscape: Convex, upper summits of fan piedmont remnants
Parent material: Mixed alluvium that includes loess
Slope: 2 to 8 percent
Elevation: 5,200 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

**Typical Profile**

Rock fragments on surface: 30 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 5 to 34 inches
Texture: Clay, clay loam
Structure: Prismatic  
Consistency: Hard, firm  
Reaction: Strongly alkaline  
Salinity: 2 to 4 millimhos per centimeter  
Sodicity (SAR): 25 to 46  
Depth: 34 to 60 inches  
Texture: Very gravelly sandy loam, very gravelly loam  
Structure: Massive  
Consistency: Hard, firm  
Reaction: Strongly alkaline  
Salinity: 4 to 8 millimhos per centimeter  
Sodicity (SAR): 46 to 60  

Soil and Water Features  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Very slow  
Available water capacity: 6.5 to 8.4 inches  
Water-supplying capacity: 7 inches  
Runoff: Medium  
Hydrologic group: D  
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—4  
Hazard of erosion: By water—slight; by wind—slight  
Shrink-swell potential: High  
Corrosivity: To steel—high; to concrete—high  
Potential for frost action: Low

Characteristics of the Beoska Soil  
Classification: Duric Natragids, fine-loamy, mixed, mesic  
Positions on landscape: Convex, lower summits of fan piedmont remnants  
Parent material: Loess over loamy and gravelly mixed alluvium  
Slope: 0 to 4 percent  
Elevation: 5,200 to 5,800 feet  
Average annual precipitation: About 7 inches  
Average annual air temperature: About 49 degrees F  
Frost-free season: About 110 days  
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile  
Depth: 0 to 9 inches  
Texture: Silt loam  
Structure: Platy  
Consistency: Slightly hard, very friable  
Reaction: Moderately alkaline  
Salinity: 2 to 4 millimhos per centimeter  
Sodicity (SAR): 0 to 5  
Depth: 9 to 18 inches  
Texture: Silty clay loam, silt loam  
Structure: Platy  
Consistency: Hard, very friable  
Reaction: Strongly alkaline  
Salinity: 8 to 16 millimhos per centimeter  
Sodicity (SAR): 25 to 46  
Depth: 18 to 60 inches  
Texture: Stratified gravelly very fine sandy loam to gravelly sandy loam  
Structure: Massive  
Consistency: Soft, very friable  
Reaction: Strongly alkaline  
Salinity: 16 to 30 millimhos per centimeter  
Sodicity (SAR): 46 to 60

Soil and Water Features  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Moderately slow  
Available water capacity: 7.8 to 9.7 inches  
Water-supplying capacity: 7 inches  
Runoff: Medium  
Hydrologic group: B  
Erosion factors (upper layer): K value—0.55; T value—5; wind erodibility group—5  
Hazard of erosion: By water—slight; by wind—slight  
Shrink-swell potential: Moderate  
Corrosivity: To steel—high; to concrete—high  
Potential for frost action: Low

Characteristics of the Whirlo Soil  
Classification: Typic Camborthids, loamy-skeletal, mixed, mesic  
Positions on landscape: Concave, lower inset fans and fan aprons  
Parent material: Mixed alluvium that includes a large amount of loess  
Slope: 2 to 8 percent  
Elevation: 5,200 to 5,800 feet  
Average annual precipitation: About 7 inches  
Average annual air temperature: About 49 degrees F  
Frost-free season: About 110 days  
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile  
Depth: 0 to 12 inches  
Texture: Gravelly loam  
Structure: Platy  
Consistency: Slightly hard, very friable  
Reaction: Moderately alkaline  
Salinity: 2 to 4 millimhos per centimeter  
Sodicity (SAR): 0 to 2  
Depth: 12 to 24 inches
Texture: Very gravelly fine sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 24 to 60 inches
Texture: Very gravelly coarse sandy loam
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 4 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.2 to 6.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Xerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Spiny hopsage, bluegrass, Wyoming big sagebrush

Inclusion 2
Classification: Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Adjacent to fan skirts near alluvial flats
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 3
Classification: Xerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: The upper inset fans
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Oxcorel Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Beoska Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Whirlo Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Oxcorel Soil
Range seeding: Poor—too arid, rooting depth, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Beoska Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, excess salt, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Whirlo Soil
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source
Interpretive Groups
Land capability classification: Oxcorel soil—IVe, irrigated, and VIIc, nonirrigated; Beoska soil—Illc, irrigated, and VIIc, nonirrigated; Whirlo soil—Ille, irrigated, and VIIc, nonirrigated
Range site: Oxcorel, Beoska, and Whirlo soils—024X002N; Inclusion 1—024X020N; Inclusion 2—024X003N; Inclusion 3—024X005N

2061—Oxcorel-Zaidy-Grassval association
Positions on landscape: Fan piedmonts

Composition
Major components:
Oxcorel gravelly sandy loam, 2 to 8 percent slopes—55 percent
Zaidy very gravelly sandy loam, 2 to 8 percent slopes—15 percent
Grassval very gravelly sandy loam, 2 to 8 percent slopes—15 percent
Contrasting inclusions:
Wieland gravelly sandy loam, 2 to 8 percent slopes—8 percent
Durixerolic Camborthids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—4 percent
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—3 percent

Characteristics of the Oxcorel Soil
Classification: Duric Natargids, fine, montmorillonitic, mesic
Positions on landscape: The lower summits of fan piedmont remnants
Parent material: Mixed alluvium that includes loess
Slope: 2 to 8 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 8 inches
Texture: Gravelly sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Structure: Prismatic
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 25 to 46

Depth: 34 to 60 inches
Texture: Very gravelly sandy loam, very gravelly loam
Structure: Massive
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 6.5 to 8.5 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Zaidy Soil
Classification: Haploxerolic Durargids, fine-loamy, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, bluegrass, black sagebrush

Typical Profile
Rock fragments on surface: 5 percent cobbles, 50 percent pebbles
Depth: 0 to 5 inches
Texture: Very gravelly sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 5 to 25 inches
Lander County, Nevada, South Part

Texture: Loam, clay loam, gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 25 to 60 inches
Material: Cemented hardpan

**Soil and Water Features**

Depth to the hardpan: 20 to 30 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderately slow

Available water capacity: 2.8 to 3.4 inches

Water-supplying capacity: 8 inches

Runoff: Medium

Hydrologic group: C

Erosion factors (upper layer): K value—0.05; T value—2; wind erodibility group—5

Hazard of erosion: By water—slight; by wind—moderate

Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Moderate

**Characteristics of the Grassval Soil**

Classification: Xerolic Durargids, loamy, mixed, mesic, shallow

Positions on landscape: The upper summits of fan piedmont remnants

Parent material: Mixed alluvium

Slope: 2 to 8 percent

Elevation: 5,800 to 6,200 feet

Average annual precipitation: About 9 inches

Average annual air temperature: About 46 degrees F

Frost-free season: About 100 days

Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, black sagebrush

**Typical Profile**

Rock fragments on surface: 10 percent pebbles

Depth: 0 to 4 inches

Texture: Very gravelly sandy loam

Structure: Platy

Consistency: Slightly hard, very friable

Reaction: Moderately alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 2

Depth: 4 to 13 inches

Texture: Gravelly clay loam, gravelly loam

Structure: Subangular blocky

Consistency: Hard, friable

Reaction: Moderately alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 5

Depth: 13 inches

Material: Indurated hardpan

**Soil and Water Features**

Depth to the hardpan: 8 to 14 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderately slow

Available water capacity: 1 to 2 inches

Water-supplying capacity: 8 inches

Runoff: Medium

Hydrologic group: D

Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—5

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Moderate

**Contrasting Inclusions**

**Inclusion 1**

Classification: Durixerolic Haplargids, fine, montmorillonitic, mesic

Positions on landscape: The lower summits of fan piedmont remnants

Distinctive present vegetation: Wyoming big sagebrush

**Inclusion 2**

Classification: Durixerolic Camborthids, loamy-skeletal, mixed, mesic

Positions on landscape: Inset fan remnants

Distinctive present vegetation: Wyoming big sagebrush

**Inclusion 3**

Classification: Xerolic Camborthids, loamy-skeletal, mixed, mesic

Positions on landscape: Inset fans

Distinctive present vegetation: Wyoming big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Oxcreel Soil**

Wild herbaceous plants (nonirrigated): Very poor

Shrubs (nonirrigated): Very poor

**Zaldy Soil**

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

**Grassval Soil**

Wild herbaceous plants (nonirrigated): Poor

Shrubs (nonirrigated): Poor
Suitability and Limitations for Selected Uses

**Oxcorel Soil**
*Range seeding:* Poor—too arid, rooting depth, excess sodium
*Roadfill:* Good
*Topsoil:* Poor—small stones, area reclaim, excess sodium
*Daily cover for landfill:* Poor—small stones
*Shallow excavations:* Moderate—too clayey
*Local roads and streets:* Severe—low strength, shrink-swell
*Pond reservoir areas:* Severe—seepage
*Embankments, dikes, and levees:* Severe—seepage, excess sodium
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Zaidy Soil**
*Range seeding:* Poor—droughty
*Roadfill:* Poor—cemented pan
*Topsoil:* Poor—small stones
*Daily cover for landfill:* Poor—cemented pan
*Shallow excavations:* Severe—cemented pan
*Local roads and streets:* Moderate—cemented pan, shrink-swell
*Pond reservoir areas:* Moderate—cemented pan, slope
*Embankments, dikes, and levees:* Severe—thin layer
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Grassval Soil**
*Range seeding:* Poor—droughty, small stones
*Roadfill:* Poor—cemented pan
*Topsoil:* Poor—cemented pan, small stones
*Daily cover for landfill:* Poor—cemented pan, small stones
*Shallow excavations:* Severe—cemented pan
*Local roads and streets:* Severe—cemented pan
*Pond reservoir areas:* Severe—cemented pan
*Embankments, dikes, and levees:* Severe—thin layer
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Interpretive Groups**
*Land capability classification:* Oxcorel soil—IVe, irrigated, and VIs, nonirrigated; Zaidy soil—IVs, irrigated, and VIs, nonirrigated; Grassval soil—VIs, nonirrigated
*Range site:* Oxcorel soil—028B017N; Zaidy and Grassval soils—028B011N; Inclusion 1—028B010N; Inclusion 2—028B052N; Inclusion 3—028B010N

2063—Oxcorel-Pineval association
*Positions on landscape:* Fan piedmonts

Composition

**Major components:**
Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—40 percent
Pineval gravelly loam, 15 to 30 percent slopes—25 percent
Pineval gravelly loam, 8 to 15 percent slopes—20 percent

**Contrasting inclusions:**
Allor gravelly loam, 4 to 15 percent slopes—5 percent
Orovada fine sandy loam, 2 to 8 percent slopes—4 percent
Duroarthic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 15 to 50 percent slopes—3 percent
Wieland gravelly loam, 2 to 8 percent slopes—3 percent

**Characteristics of the Oxcorel Soil**

*Classification:* Duric Natargids, fine, montmorillonitic, mesic
*Positions on landscape:* Summits of fan piedmont remnants
*Parent material:* Mixed alluvium that includes loess
*Slope:* 2 to 8 percent
*Elevation:* 5,300 to 6,300 feet
*Average annual precipitation:* About 8 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

**Typical Profile**
*Rock fragments on surface:* 30 percent pebbles
*Depth:* 0 to 8 inches
*Texture:* Gravelly very fine sandy loam
*Structure:* Platy
*Consistency:* Slightly hard, very friable
*Reaction:* Strongly alkaline
*Salinity:* 0 to 4 millimhos per centimeter
*Sodicity (SAR):* 2 to 10
*Depth:* 8 to 34 inches
*Texture:* Clay, clay loam
*Structure:* Prismatic
*Consistency:* Hard, firm
*Reaction:* Strongly alkaline
*Salinity:* 2 to 4 millimhos per centimeter
*Sodicity (SAR):* 25 to 46
*Depth:* 34 to 60 inches
*Texture:* Very gravelly sandy loam, very gravelly loam
*Structure:* Massive
*Consistency:* Hard, firm
*Reaction:* Strongly alkaline
*Salinity:* 4 to 8 millimhos per centimeter
Landers County, Nevada, South Part

Sodicity (SAR): 46 to 60

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 6.5 to 8.5 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Pineal Soil, Moderately Steep

Classification: Durixerollic Haplorgids, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 15 to 30 percent
Elevation: 5,300 to 6,300 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.2 to 4.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Pineal Soil, Strongly Sloping

Classification: Durixerollic Haplorgids, loamy-skeletal, mixed, mesic
Positions on landscape: Shoulder slopes and the upper side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 8 to 15 percent
Elevation: 5,300 to 6,300 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.2 to 4.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Fan aprons
Distinctive present vegetation: Bluegrass, needlegrass, Wyoming big sagebrush

Inclusion 2
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Durorthodic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Scarps on side slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, galleta, Wyoming big sagebrush

Inclusion 4
Classification: Durixerollic Haplargids, fine, montmorillonitic, mesic
Positions on landscape: The upper summits of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Oxcorel Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Pineval Soil, Moderately Steep
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Pineval Soil, Strongly Sloping
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Oxcorel Soil
Range seeding: Poor—too arid, rooting depth, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Pineval Soil, Moderately Steep
Range seeding: Fair—too arid, erodes easily
Roadfill: Fair—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Pineval Soil, Strongly Sloping
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—slope, frost action
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups

Land capability classification: Oxcorel soil—IVe, irrigated, and VII, nonirrigated; Pineval soil, moderately steep—Vle, nonirrigated; Pineval soil, strongly sloping—IVe, irrigated, and VIs, nonirrigated
Range site: Oxcorel soil—024X002N; Pineval soils—
2069—Oxcorel-Wieland-Spasey association

*Positions on landscape:* Fan piedmonts

**Composition**

*Major components:*
 Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—40 percent
 Wieland gravelly loam, 2 to 8 percent slopes—30 percent
 Spasey gravelly fine sandy loam, 2 to 4 percent slopes—15 percent

*Contrasting inclusions:*
 Orovada fine sandy loam, 2 to 8 percent slopes—7 percent
 Duric Haplargids, loam-skeletal, mixed, mesic, 8 to 15 percent slopes—5 percent
 Duric Camborthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—3 percent

**Characteristics of the Oxcorel Soil**

*Classification:* Duric Natrargids, fine, montmorillonitic, mesic

*Positions on landscape:* The lower,concave summits of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess

*Slope:* 2 to 8 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bottlebrush squirreltail, Indian ricegrass, shadscale, bud sagebrush

**Typical Profile**

*Rock fragments on surface:* 30 percent pebbles

*Depth:* 0 to 6 inches

*Texture:* Gravelly very fine sandy loam

*Structure:* Platy

*Consistency:* Slightly hard, very friable

*Reaction:* Strongly alkaline

*Salinity:* 0 to 4 millimhos per centimeter

*Sodicity (SAR):* 2 to 10

*Depth:* 6 to 37 inches

*Texture:* Clay, clay loam

*Structure:* Prismatic

*Consistency:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 2 to 4 millimhos per centimeter

*Sodicity (SAR):* 25 to 46

*Depth:* 37 to 60 inches

*Texture:* Very gravelly sandy loam, very gravelly loam

*Structure:* Massive

*Consistency:* Hard, firm

*Reaction:* Strongly alkaline

*Salinity:* 4 to 8 millimhos per centimeter

*Sodicity (SAR):* 46 to 60

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Very slow

*Available water capacity:* 6.5 to 8.4 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Medium

*Hydrologic group:* D

*Erosion factors (upper layer):* K value—0.28; T value—5; wind erodibility group—4

*Hazard of erosion:* By water—slight; by wind—severe

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—high

*Potential for frost action:* Low

**Characteristics of the Wieland Soil**

*Classification:* Durixerollic Haplargids, fine, montmorillonitic, mesic

*Positions on landscape:* The lower and intermediate areas on convex summits of fan piedmont remnants

*Parent material:* Mixed alluvium that includes loess and volcanic ash

*Slope:* 2 to 8 percent

*Elevation:* 5,800 to 6,200 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 20 percent pebbles

*Depth:* 0 to 8 inches

*Texture:* Gravelly loam

*Structure:* Platy

*Consistency:* Soft, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 8 to 20 inches

*Texture:* Gravelly clay

*Structure:* Prismatic

*Consistency:* Hard, firm

*Reaction:* Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 20 to 25 inches
Texture: Gravelly clay loam, gravelly sandy clay loam
Structure: Massive
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 25 to 60 inches
Texture: Gravelly loam, gravelly sandy loam
Structure: Massive
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6 to 9 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.32; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Spasprey Soil
Classification: Haploxerolic Durargids, fine-loamy, mixed, mesic
Positions on landscape: The higher summits of fan piedmont remnants adjacent to the front of mountains
Parent material: Mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Platy

Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 5 to 26 inches
Texture: Clay loam, sandy clay loam
Structure: Prismatic
Consistency: Hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 26 to 33 inches
Material: Cemented hardpan
Depth: 33 to 60 inches
Texture: Fine sandy loam
Structure: Massive
Consistency: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to the hardpan: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.32; T value—3;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Bluegrass, spiny hopsage, Wyoming big sagebrush

Inclusion 2
Classification: Duric Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Oxcorel Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Wieland Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Spasprey Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Oxcorel Soil
Range seeding: Poor—too arid, rooting depth, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Wieland Soil
Range seeding: Poor—rooting depth
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Moderate—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Spasprey Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—cemented pan, area reclaim, too clayey

Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—cutbanks cave, low strength, frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Oxcorel soil—IVe, irrigated, and Vlls, nonirrigated; Wieland soil—Vlls, irrigated, and Vlls, nonirrigated; Spasprey soil—Vlls, irrigated, and Vlls, nonirrigated
Range site: Oxcorel soil—024X002N; Wieland and Spasprey soils—024X005N; Inclusion 1—024X020N; Inclusions 2 and 3—024X002N

2081—Fenster-Jesse Camp association
Positions on landscape: Semibolson floors

Composition
Major components:
Fenster silt loam—50 percent
Jesse Camp silt loam, occasionally flooded—40 percent
Contrasting inclusions:
Kobe gravelly loam, 0 to 4 percent slopes—4 percent
Bubus loam, 0 to 4 percent slopes—3 percent
Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—3 percent

Characteristics of the Fenster Soil
Classification: Typic Torriorthents, fine-silty, mixed (calcareous), frigid
Positions on landscape: Dissected areas of stream terraces
Parent material: Loess and silty, calcareous alluvium
Slope: 0 to 2 percent
Elevation: 6,100 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needlegrass, shadscale, bud sagebrush

Typical Profile
Depth: 0 to 5 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 5 to 10 inches
Texture: Silt loam
Structure: Subangular blocky
Consistence: Hard, firm
Reaction: Very strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 10 to 60 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 4 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 11 to 13 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Characteristics of the Jesse Camp Soil

Classification: Xerolic Camborthids, fine-silty, mixed, frigid
Positions on landscape: Stream terraces
Parent material: Silty alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 6,100 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Basin wildrye, big sagebrush

Typical Profile

Depth: 0 to 4 inches
Texture: Silt loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 4 to 12 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 12 to 60 inches
Texture: Silt loam
Structure: Platy
Consistence: Hard, friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Occasional for brief periods in March through June
Permeability: Moderately slow
Available water capacity: 10 to 11 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerolic Camborthids, loamy-skeletal, mixed, frigid
Positions on landscape: Nonburied fan skirt remnants
Distinctive present vegetation: Indian ricegrass, spiny hopsage, Wyoming big sagebrush

Inclusion 2
Classification: Durothidic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Isolated alluvial flat remnants
Distinctive present vegetation: Shadscale, black greasewood, bud sagebrush

Inclusion 3
Classification: Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic
Positions on landscape: Alluvial flats along stream channels
Distinctive present vegetation: Alkali sacaton, black greasewood, basin wildrye

Major Current Uses

Livestock grazing, wildlife habitat
Suitability for Wildlife Habitat Elements

Fenster Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Jesse Camp Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Fenster Soil
Range seeding: Poor—too arid, excess salt
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Jesse Camp Soil
Range seeding: Fair—too arid
Roadfill: Fair—low strength, shrink-swell
Topsoil: Good
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Fenster soil—Vlls, nonirrigated; Jesse Camp soil—Illw, irrigated, and V1w, nonirrigated
Range site: Fenster soil—028B017N; Jesse Camp soil—028B009N; Inclusion 1—028B010N; Inclusion 2—024X003N; Inclusion 3—028B004N

2088—Punchbowl-Jung-Teguro association

Positions on landscape: Foothills
Composition

Major components:
Punchbowl very gravelly loam, 15 to 50 percent slopes—40 percent
Jung very gravelly loam, 15 to 30 percent slopes—30 percent
Teguro very gravelly loam, 30 to 50 percent slopes, extremely stony—15 percent

Contrasting inclusions:
Lithic Xerollic Hapludands, clayey-skeletal, montmorillonitic, mesic, 8 to 15 percent slopes—5 percent
Lithic Natargids, loamy, mixed, mesic, 15 to 50 percent slopes—4 percent
Punchbowl very gravelly loam, 8 to 15 percent slopes—3 percent
Rock outcrop—3 percent

Characteristics of the Punchbowl Soil

Classification: Lithic Xerollic Hapludands, loamy, mixed, frigid
Positions on landscape: The lower, convex, north-facing shoulder slopes and side slopes of foothills
Parent material: Residuum derived from andesite, dacite, rhyolite, and tuff
Slope: 15 to 50 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile

Rock fragments on surface: 55 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 7 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 7 to 11 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 11 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Teguro Soil
Classification: Lithic Argixerolls, loamy, mixed, frigid
Positions on landscape: The higher, north-facing side slopes of foothills
Parent material: Residuum derived from tuff
Slope: 30 to 50 percent
Elevation: 6,500 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluegrass, needlegrass, mountain big sagebrush, singleleaf pinyon, Utah juniper
Site index for common trees: Singleleaf pinyon—30; Utah juniper—30

Typical Profile
Rock fragments on surface: 15 percent stones, 55 percent pebbles
Depth: 0 to 6 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 8 to 10 inches
Texture: Very cobbly clay
Structure: Prismatic
Consistency: Very hard, firm
Reaction: Moderately alkaline
Depth: 10 to 12 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate
Contrasting Inclusions

Inclusion 1
Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Toe slopes of foothills
Distinctive present vegetation: Bluegrass, black sagebrush

Inclusion 2
Classification: Lithic Natrargids, loamy, mixed, mesic
Positions on landscape: Convex, south-facing shoulder slopes of foothills
Distinctive present vegetation: Shadscale, bud sagebrush, small rabbitbrush

Inclusion 3
Classification: Lithic Xerollic Haplargids, loamy, mixed, frigid
Positions on landscape: Crests of foothills
Distinctive present vegetation: Black sagebrush

Inclusion 4
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Minor Inclusion
Kind of material: Rock stripes
Positions on landscape: Below areas of Rock outcrop
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Punchbowl Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Jung Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Teguro Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Poor
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Punchbowl Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Jung Soil
Range seeding: Poor—small stones, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Teguro Soil
Range seeding: Poor—small stones, droughty
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Punchbowl, Jung, and Teguro soils—VII, nonirrigated
Range site: Punchbowl and Jung soils—02B016N;
Teguro soil—025X062N; Inclusion 1—024X030N;
Inclusion 2—024X002N; Inclusion 3—024X016N;
Inclusion 4—none

2089—Punchbowl-Jung-Locane association
Positions on landscape: Foothills

Composition

Major components:
Punchbowl very gravelly loam, 15 to 50 percent slopes—35 percent
Jung very gravelly loam, 8 to 30 percent slopes—30 percent
Locane very gravelly loam, 15 to 30 percent slopes—20 percent
Contrasting inclusions:
Rock outcrop—6 percent
Durixerollic Camborthids, coarse-loamy, mixed, mesic, 4 to 15 percent slopes—5 percent
Lithic Natrargids, clayey-skeletal, montmorillonitic, mesic, 15 to 50 percent slopes—4 percent
Characteristics of the Punchbowl Soil

Classification: Lithic Xerollic Haplargids, loamy, mixed, frigid

Positions on landscape: The higher, convex side slopes and lower, north-facing side slopes of foothills

Parent material: Residue derived from andesite, dacite, rhyolite, and tuff

Slope: 15 to 50 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile

Depth: 0 to 3 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 3 to 7 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 7 to 11 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 11 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Medium

Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1
wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Jung Soil

Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

Positions on landscape: The lower, convex side slopes and higher, south-facing side slopes of foothills

Parent material: Residue derived from volcanic and metavolcanic rock

Slope: 8 to 30 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

Typical Profile

Rock fragments on surface: 40 percent pebbles

Depth: 0 to 8 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral

Depth: 8 to 19 inches
Texture: Very cobbly clay
Structure: Prismatic
Consistence: Very hard, firm
Reaction: Moderately alkaline

Depth: 19 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Medium

Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1
wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Locane Soil

Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

Positions on landscape: The higher, concave, north-facing side slopes of foothills

Parent material: Residue derived from shale and conglomerate
Landscaping, Nevada, South Part

Slope: 15 to 30 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**
- Depth: 0 to 6 inches
- Texture: Very gravelly loam
- Structure: Platy
- Consistency: Slightly hard, very friable
- Reaction: Neutral
- Depth: 6 to 14 inches
- Texture: Very gravelly clay loam
- Structure: Angular blocky
- Consistency: Hard, friable
- Reaction: Neutral
- Depth: 14 inches
- Material: Unweathered bedrock

**Soil and Water Features**
- Depth to bedrock: 10 to 20 inches
- Depth to a seasonal high water table: More than 60 inches
- Frequency of flooding: None
- Permeability: Slow
- Available water capacity: 1.5 to 2.1 inches
- Water-supplying capacity: 8 inches
- Runoff: Rapid
- Hydrologic group: D
- Erosion factors (upper layer): K value—0.17; T value—1
- wind erosion rate—7
- Hazard of erosion: By water—moderate; by wind—slight
- Shrink-swell potential: Moderate
- Corrosivity: To steel—moderate; to concrete—low
- Potential for frost action: Low

**Contrasting Inclusions**

**Inclusion 1**
- Positions on landscape: Scattered peaks, eroded side slopes
- Distinctive present vegetation: None

**Inclusion 2**
- Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
- Positions on landscape: Concave toe slopes of foothills
- Distinctive present vegetation: Wyoming big sagebrush

**Inclusion 3**
- Classification: Lithic Natargids, clayey-skeletal, montmorillonitic, mesic
- Positions on landscape: The lower, convex, south-facing side slopes of foothills

**Distinctive present vegetation:** Shadscale, bud sagebrush

**Major Current Uses**
- Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Punchbowl Soil**
- Wild herbaceous plants (nonirrigated): Fair
- Shrubs (nonirrigated): Fair

**Jung Soil**
- Wild herbaceous plants (nonirrigated): Fair
- Shrubs (nonirrigated): Fair

**Locane Soil**
- Wild herbaceous plants (nonirrigated): Fair
- Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Punchbowl Soil**
- Range seeding: Poor—droughty, small stones
- Roadfill: Poor—depth to rock, slope
- Topsoil: Poor—depth to rock, small stones, slope
- Daily cover for landfill: Poor—depth to rock, small stones, slope
- Shallow excavations: Severe—depth to rock, slope
- Local roads and streets: Severe—depth to rock, slope
- Pond reservoir areas: Severe—depth to rock, slope
- Embankments, dikes, and levees: Severe—thin layer
- Sand: Improbable source—excess fines
- Gravel: Improbable source—excess fines

**Jung Soil**
- Range seeding: Poor—small stones, droughty
- Roadfill: Poor—depth to rock
- Topsoil: Poor—depth to rock, small stones, too clayey
- Daily cover for landfill: Poor—depth to rock, small stones, slope
- Shallow excavations: Severe—depth to rock, slope
- Local roads and streets: Severe—depth to rock, slope
- Pond reservoir areas: Severe—depth to rock, slope
- Embankments, dikes, and levees: Severe—thin layer
- Sand: Improbable source—excess fines
- Gravel: Improbable source—excess fines

**Locane Soil**
- Range seeding: Poor—droughty, small stones
- Roadfill: Poor—depth to rock
- Topsoil: Poor—depth to rock, small stones, slope
- Daily cover for landfill: Poor—depth to rock, small stones, slope
- Shallow excavations: Severe—depth to rock, slope
- Local roads and streets: Severe—depth to rock, slope
- Pond reservoir areas: Severe—depth to rock, slope
- Embankments, dikes, and levees: Severe—thin layer
- Sand: Improbable source—excess fines
- Gravel: Improbable source—excess fines
**Interpretive Groups**

*Land capability classification:* Punchbowl, Jung, and Locane soils—Vils, nonirrigated  
*Range site:* Punchbowl and Jung soils—02BB016N; Locane soil—02BB010N; Inclusion 1—none; Inclusion 2—02BB010N; Inclusion 3—02BB017N

---

**2090—Punchbowl gravelly loam, 4 to 15 percent slopes**

*Positions on landscape:* Foothills  

**Composition**

*Major component:* Punchbowl gravelly loam, 4 to 15 percent slopes—85 percent  
*Contrasting inclusions:* Aridic Argixerolls, loamy-skeletal, mixed, frigid, 8 to 15 percent slopes—7 percent  
Robson very cobble loam, 8 to 15 percent slopes—5 percent  
Rock outcrop—3 percent

**Characteristics of the Punchbowl Soil**

*Classification:* Lithic Xerolic Haplargids, loamy, mixed, frigid  
*Positions on landscape:* Crests and the upper side slopes of foothills  
*Parent material:* Residuum derived from andesite, dacite, rhyolite, and tuff  
*Slope:* 4 to 15 percent  
*Elevation:* 6,800 to 7,800 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 45 degrees F  
*Frost-free season:* About 90 days  
*Dominant present vegetation:* Black sagebrush, bluegrass, bottlebrush squirreltail

**Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 25 percent pebbles  
*Depth:* 0 to 3 inches  
*Texture:* Gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 3 to 7 inches  
*Texture:* Gravelly loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 7 to 11 inches

---

*Texture:* Gravelly clay loam  
*Structure:* Angular blocky  
*Consistence:* Hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 2 millimhos per centimeter  
*Depth:* 11 inches  
*Material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 8 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 1.3 to 1.7 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.24; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Contrasting Inclusions**

**Inclusion 1**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Concave, north-facing side slopes and toe slopes of foothills  
*Distinctive present vegetation:* Mountain big sagebrush

**Inclusion 2**

*Classification:* Lithic Xerolic Haplargids, clayey-skeletal, montmorillonitic, frigid  
*Positions on landscape:* Convex, stable, north-facing side slopes of foothills  
*Distinctive present vegetation:* Bluegrass, low sagebrush

**Inclusion 3**

*Positions on landscape:* Rims and eroded side slopes of foothills  
*Distinctive present vegetation:* None

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—depth to rock  
*Topsoil:* Poor—depth to rock, small stones
Land cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Punchbowl soil—Vlls, nonirrigated
Range site: Punchbowl soil—028B016N; Inclusion 1—028B030N; Inclusion 2—028B045N; Inclusion 3—none

2091—Punchbowl-Teguro-Sumine association

Positions on landscape: Mountains

Composition

Major components:
Punchbowl very gravelly loam, 15 to 30 percent slopes—35 percent
Teguro very gravelly loam, 30 to 50 percent slopes—25 percent
Sumine very gravelly loam, 30 to 50 percent slopes—25 percent
Contrasting inclusions:
Rock outcrop—5 percent
Aridic Argixerolls, loamy-skeletal, mixed, frigid, 50 to 75 percent slopes—5 percent
Cumulic Haploxerolls, loamy-skeletal, mixed, frigid, 2 to 8 percent slopes—5 percent

Characteristics of the Punchbowl Soil

Classification: Lithic Xerollic Haplargids, loamy, mixed, frigid
Positions on landscape: Convex, south- and west-facing side slopes of mountains
Parent material: Residuum derived from andesite, dacite, rhyolite, and tuff
Slope: 15 to 30 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile
Rock fragments on surface: 55 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly loam

Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 7 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 7 to 11 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 11 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1;
wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Teguro Soil

Classification: Lithic Argixerolls, loamy, mixed, frigid
Positions on landscape: Concave, south- and east-facing side slopes of mountains
Parent material: Residuum derived from tuff
Slope: 30 to 50 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluegrass, needlegrass, mountain big sagebrush, singleleaf pinyon, Utah juniper
Site index for common trees: Singleleaf pinyon—45; Utah juniper—45

Typical Profile
Rock fragments on surface: 55 percent pebbles
Depth: 0 to 4 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 4 to 16 inches
Texture: Gravelly loam, gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Neutral

Depth: 16 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.0 to 2.6 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Sumine Soil
Classification: Aridic Arqueroolls, loamy-skeletal, mixed, frigid
Positions on landscape: North- and east-facing side slopes of mountains
Parent material: Colluvium and residuum derived from quartzite and sandstone
Slope: 30 to 50 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Bluebunch wheatgrass, mountain big sagebrush

Typical Profile
Depth: 0 to 10 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral

Depth: 10 to 30 inches
Texture: Very cobbly clay loam, very gravelly clay loam, very gravelly loam
Structure: Angular blocky
Consistency: Hard, firm
Reaction: Mildly alkaline

Depth: 30 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.5 to 3.6 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Positions on landscape: Rims, escarpments
Distinctive present vegetation: None

Inclusion 2
Classification: Aridic Arqueroolls, loamy-skeletal, mixed, frigid
Positions on landscape: Slightly concave, north-facing side slopes of mountains
Distinctive present vegetation: Idaho fescue, Utah juniper

Inclusion 3
Classification: Cumulic Haploxerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Below springs, along canyon bottoms
Distinctive present vegetation: Basin wildrye, bluegrass, basin big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Punchbowl Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Teguro Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Poor
Shrubs (nonirrigated): Fair
Sumine Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Punchbowl Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Teguro Soil
Range seeding: Poor—small stones, droughty
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Sumine Soil
Range seeding: Poor—small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Punchbowl, Teguro, and
Sumine soils—VII, nonirrigated
Range site: Punchbowl soil—024X030N; Teguro soil—
024X049N; Sumine soil—024X029N; Inclusion 1—
none; Inclusion 2—024X023N; Inclusion 3—
028B003N

Composition
Major components:
Punchbowl gravelly loam, 30 to 50 percent slopes—50 percent
Belate very gravelly loam, 30 to 50 percent slopes—20 percent
Reluctan very gravelly loam, 15 to 30 percent slopes—
15 percent
Contrasting inclusions:
Rock outcrop—6 percent
Xerollic Haplargids, loamy-skeletal, mixed, frigid, 15 to
50 percent slopes—4 percent
Durixerollic Camborthids, loamy-skeletal, mixed, frigid, 8
to 15 percent slopes—3 percent
Rubble land—2 percent

Characteristics of the Punchbowl Soil
Classification: Lithic Xerollic Haplargids, loamy, mixed, frigid
Positions on landscape: Convex crests, shoulder slopes, and
upper side slopes of mountains
Parent material: Residual derived from andesite,
dacite, rhyolite, and tuff
Slope: 30 to 50 percent
Elevation: 6,400 to 7,700 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush,
bluegrass, bottlebrush squirltail

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 3 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 3 to 7 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 7 to 11 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 11 inches
Material: Unweathered bedrock

2092—Punchbowl-Belate-Reluctan association

Positions on landscape: Mountains
Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.7 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Reluctan Soil

Classification: Aridic Argixerolls, fine-loamy, mixed, frigid
Positions on landscape: Concave side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic rock
Slope: 15 to 30 percent
Elevation: 6,600 to 7,700 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush, snowberry

Typical Profile

Rock fragments on surface: 50 percent pebbles
Depth: 0 to 8 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Neutral

Depth: 8 to 33 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline

Depth: 33 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.7 to 4.6 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.15; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate
Contrasting Inclusions

Inclusion 1
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 2
Classification: Xerollic Haplorgids, loamy-skeletal, mixed, frigid
Positions on landscape: Concave toe slopes of mountains
Distinctive present vegetation: Indian ricegrass, black sagebrush

Inclusion 3
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 4
Positions on landscape: Rock stringers below areas of Rock outcrop
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Punchbowl Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Belate Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Reluctan Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Punchbowl Soil
Range seeding: Poor—droughty, erodes easily
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Reluctan Soil
Range seeding: Poor—small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Punchbowl soil— VIIe, nonirrigated; Belate and Reluctan soils— VIl, nonirrigated
Range site: Punchbowl soil—028B016N; Belate soil—024X027N; Reluctan soil—024X021N; Inclusion 1—none; Inclusion 2—028B016N; Inclusion 3—028B003N; Inclusion 4—none

2093—Punchbowl-Rock outcrop association
Positions on landscape: Mountains

Composition
Major components:
Punchbowl loam, 15 to 30 percent slopes—70 percent
Rock outcrop—15 percent
Contrasting inclusions:
Lithic Argixerolls, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—9 percent
Durixerollic Camborthids, loamy-skeletal, mixed, frigid, 8 to 15 percent slopes—3 percent
Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid, 8 to 15 percent slopes—3 percent

Characteristics of the Punchbowl Soil
Classification: Lithic Xerollic Haplorgids, loamy, mixed, frigid
Positions on landscape: Convex crests, shoulder slopes, and side slopes of mountains
Parent material: Residuum derived from andesite, dacite, rhyolite, and tuff
Slope: 15 to 30 percent
Elevation: 6,600 to 7,600 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile
Rock fragments on surface: 2 percent cobbles, 10 percent pebbles
Depth: 0 to 3 inches
Texture: Loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 7 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 7 to 11 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 11 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.49; T value—1; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop
Positions on landscape: Scattered peaks, escarpments
Dominant present vegetation: None

Inclusion 1
Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid

Positions on landscape: Concave, north-facing side slopes of mountains
Distinctive present vegetation: Singleleaf pinyon, Utah juniper, Wyoming big sagebrush

Inclusion 2
Classification: Durixerolic Camborthids, loamy-skeletal, mixed, frigid
Positions on landscape: Toe slopes of mountains
Distinctive present vegetation: Black sagebrush

Inclusion 3
Classification: Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Bluegrass, Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Punchbowl Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Punchbowl Soil
Range seeding: Poor—droughty, erodes easily
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Punchbowl soil—VIIe, nonirrigated; Rock outcrop—VIIls, nonirrigated
Range site: Punchbowl soil—028B016N; Rock outcrop—none; Inclusion 1—025X052N; Inclusion 2—028B016N; Inclusion 3—028B010N

2094—Punchbowl-Simpark-Akerue association
Positions on landscape: Mountains

Composition
Major components:
Punchbowl gravelly loam, 8 to 15 percent slopes—40 percent
Simpark very cobbly loam, 2 to 8 percent slopes—25 percent
Akerue very cobbly loam, 15 to 30 percent slopes—20 percent
Contrasting inclusions:
Durixerollic Camborthids, loamy-skeletal, mixed, frigid, 4 to 15 percent slopes—8 percent
Rock outcrop—4 percent
Typic Nadurargids, fine, montmorillonitic, mesic, 8 to 15 percent slopes—3 percent

**Characteristics of the Punchbowl Soil**

**Classification:** Lithic Xerollic Haplargids, loamy, mixed, frigid

**Positions on landscape:** Convex shoulder slopes above escarpments on mountains

**Parent material:** Residuum derived from andesite, dacite, rhyolite, and tuff

**Slope:** 8 to 15 percent

**Elevation:** 6,300 to 6,800 feet

**Average annual precipitation:** About 9 inches

**Average annual air temperature:** About 45 degrees F

**Frost-free season:** About 90 days

**Dominant present vegetation:** Black sagebrush, bluegrass, bottlebrush squirreltail

**Typical Profile**

**Rock fragments on surface:** 25 percent pebbles

**Depth:** 0 to 3 inches

**Texture:** Gravelly loam

**Structure:** Platy

**Consistency:** Slightly hard, very friable

**Reaction:** Mildly alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 3 to 7 inches

**Texture:** Gravelly loam

**Structure:** Subangular blocky

**Consistency:** Slightly hard, friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 7 to 11 inches

**Texture:** Gravelly clay loam

**Structure:** Angular blocky

**Consistency:** Hard, friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 11 inches

**Material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 8 to 14 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Moderately slow

**Available water capacity:** 1.3 to 1.7 inches

**Water-supplying capacity:** 8 inches

**Runoff:** Medium

**Hydrologic group:** D

**Erosion factors (upper layer):** K value—0.24; T value—1; wind erodibility group—6

**Hazard of erosion:** By water—slight; by wind—slight

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Moderate

---

**Characteristics of the Simpark Soil**

**Classification:** Xerollic Durargids, loamy-skeletal, mixed, frigid, shallow

**Positions on landscape:** Convex, broad summits of mountains

**Parent material:** Residuum that is derived from andesite and rhyolite and includes volcanic ash

**Slope:** 2 to 8 percent

**Elevation:** 6,300 to 6,800 feet

**Average annual precipitation:** About 9 inches

**Average annual air temperature:** About 44 degrees F

**Frost-free season:** About 80 days

**Dominant present vegetation:** Black sagebrush, Indian ricegrass, bottlebrush squirreltail

**Typical Profile**

**Rock fragments on surface:** 25 percent cobbles, 20 percent pebbles

**Depth:** 0 to 13 inches

**Texture:** Very cobbly loam

**Structure:** Subangular blocky

**Consistency:** Slightly hard, very friable

**Reaction:** Mildly alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 13 to 18 inches

**Texture:** Very cobbly loam, very gravelly loam

**Structure:** Subangular blocky

**Consistency:** Slightly hard, very friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 18 to 22 inches

**Material:** Indurated hardpan

**Structure:** Massive

**Consistency:** Extremely hard, extremely firm

**Depth:** 22 inches

**Material:** Unweathered bedrock

**Soil and Water Features**

**Depth to the hardpan:** 14 to 20 inches

**Depth to bedrock:** 20 to 30 inches

**Depth to a seasonal high water table:** More than 60 inches
Characteristics of the Akerue Soil

Classification: Xerollic Durargids, clayey-skeletal, montmorillonitic, frigid, shallow
Positions on landscape: Side slopes of mountains
Parent material: Residuum derived from andesite, rhyolite, and quartzite
Slope: 15 to 30 percent
Elevation: 6,300 to 6,800 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, needleandthet, Indian ricegrass, small rabbitbrush

Typical Profile

Rock fragments on surface: 35 percent cobbles and stones. 35 percent pebbles

Depth: 0 to 3 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter

Depth: 3 to 15 inches
Texture: Very cobbly clay loam, very cobbly clay
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 15 to 21 inches
Material: Indurated hardpan
Structure: Massive
Consistence: Extremely hard, extremely firm

Depth: 21 inches
Material: Unweathered bedrock

Soil Water Features

Depth to the hardpan: 14 to 20 inches
Depth to bedrock: 15 to 26 inches

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.0 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, frigid
Positions on landscape: Toe slopes of mountains, intermountain drainageways
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Positions on landscape: Rims, cliffs
Distinctive present vegetation: None

Inclusion 3
Classification: Typic Nadurargids, fine, montmorillonitic, mesic
Positions on landscape: Slightly concave, south-facing side slopes below escarpments on mountains
Distinctive present vegetation: Shadscale, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Punchbowl Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Simpark Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Akerue Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Punchbowl Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Simpark Soil**

Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—cemented pan, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock, cemented pan, large stones
Local roads and streets: Severe—cemented pan, large stones
Pond reservoir areas: Severe—cemented pan
Embarkments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Akerue Soil**

Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, cemented pan, too clayey
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, cemented pan
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, cemented pan, slope
Embarkments, dikes, and levees: Severe—large stones
Sand: Improbable—excess fines, large stones
Gravel: Improbable—excess fines, large stones

**Interpretive Groups**

Land capability classification: Punchbowl, Simpark, and Akerue soils—VIII, nonirrigated
Range site: Punchbowl, Simpark, and Akerue soils—028B016N; Inclusion 1—028B010N; Inclusion 2—none; Inclusion 3—024X002N

**2095—Punchbowl-Robson-Rock outcrop association**

**Composition**

Major components:
Punchbowl cobbly loam, 8 to 15 percent slopes—40 percent
Robson cobbly loam, 8 to 15 percent slopes—30 percent
Rock outcrop—15 percent

Contrasting inclusions:
Xerolic Haplorgids, fine, montmorillonitic, frigid, 2 to 8 percent slopes—8 percent
Lithic Xerolic Haplorgids, clayey, montmorillonitic, frigid, 8 to 15 percent slopes—4 percent
Aridic Argixerolls, fine, montmorillonitic, frigid, 8 to 15 percent slopes—3 percent

**Characteristics of the Punchbowl Soil**

Classification: Lithic Xerolic Haplorgids, loamy, mixed, frigid
Positions on landscape: Convex crests and side slopes of mountains
Parent material: Residuum derived from andesite, dacite, rhyolite, and tuff
Slope: 8 to 15 percent
Elevation: 6,500 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, bluegrass, bottlebrush squirreltail

**Typical Profile**

Rock fragments on surface: 20 percent cobbles, 10 percent pebbles
Depth: 0 to 3 inches
Texture: Cobby loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 7 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 7 to 11 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 11 inches
Material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.8 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D

Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

**Characteristics of the Robson Soil**

**Classification:** Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

**Positions on landscape:** Convex, north-facing side slopes of mountains

**Parent material:** Residuum derived from siliceous tuff, rhyolite, and andesite

**Slope:** 8 to 15 percent
**Elevation:** 6,500 to 7,000 feet

**Average annual precipitation:** About 12 inches
**Average annual air temperature:** About 44 degrees F
**Frost-free season:** About 90 days

**Dominant present vegetation:** Low sagebrush, Sandberg bluegrass

**Typical Profile**

**Rock fragments on surface:** 20 percent cobbles, 10 percent pebbles

**Depth:** 0 to 7 inches
**Texture:** Cobbly loam
**Structure:** Platy
**Consistence:** Soft, very friable
**Reaction:** Neutral

**Salinity:** 0 to 1 millimhos per centimeter

**Depth:** 7 to 19 inches

**Texture:** Very cobbly clay, extremely cobbly clay

**Structure:** Angular blocky
**Consistence:** Hard, firm
**Reaction:** Mildly alkaline

**Salinity:** 0 to 1 millimho per centimeter

**Depth:** 19 inches
**Material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 12 to 20 inches
**Depth to a seasonal high water table:** More than 60 inches
**Frequency of flooding:** None
**Permeability:** Slow
**Available water capacity:** 0.6 to 1.2 inches

**Water-supplying capacity:** 8 inches

**Runoff:** Rapid

**Hydrologic group:** D

Erosion factors (upper layer): K value—0.20; T value—1; wind erodibility group—6

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

**Characteristics of the Rock Outcrop**

**Positions on landscape:** Scattered peaks, eroded side slopes

**Dominant present vegetation:** None

**Contrasting Inclusions**

**Inclusion 1**

**Classification:** Xerollic Haplargids, fine, montmorillonitic, frigid

**Positions on landscape:** Intermountain drainageways

**Distinctive present vegetation:** Basin wildrye, basin big sagebrush

**Inclusion 2**

**Classification:** Lithic Xerollic Haplargids, clayey, montmorillonitic, frigid

**Positions on landscape:** Concave, upper, north-facing side slopes of mountains

**Distinctive present vegetation:** Mountain big sagebrush, Wyoming big sagebrush

**Inclusion 3**

**Classification:** Arid Argixerolls, fine, montmorillonitic, frigid

**Positions on landscape:** High summits of mountains

**Distinctive present vegetation:** Low sagebrush, bluegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Punchbowl Soil**

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

**Robson Soil**

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Punchbowl Soil**

Range seeding: Poor—droughty

Roadfill: Poor—depth to rock

Topsoil: Poor—depth to rock, small stones

Daily cover for landfill: Poor—depth to rock, small stones

Shallow excavations: Severe—depth to rock

Local roads and streets: Severe—depth to rock

Pond reservoir areas: Severe—depth to rock, slope
Landers County, Nevada, South Part

**Embankments, dikes, and levees:** Severe—thin layer  
**Sand:** Improbable source—excess fines  
**Gravel:** Improbable source—excess fines  

**Robson Soil**  
**Range seeding:** Poor—droughty  
**Roadfill:** Poor—depth to rock, large stones  
**Topsoil:** Poor—depth to rock, small stones, too clayey  
**Daily cover for landfill:** Poor—depth to rock, large stones  
**Shallow excavations:** Severe—depth to rock, large stones  
**Local roads and streets:** Severe—depth to rock, large stones  
**Pond reservoir areas:** Severe—depth to rock, slope  
**Embankments, dikes, and levees:** Severe—large stones  
**Sand:** Improbable source—excess fines, large stones  
**Gravel:** Improbable source—excess fines, large stones

**Interpretive Groups**  
**Land capability classification:** Punchbowl and Robson soils—VIIa, nonirrigated; Rock outcrop—VIIIa, nonirrigated  
**Range site:** Punchbowl soil—028B016N; Robson soil—028B045N; Rock outcrop—none; Inclusion 1—028B003N; Inclusion 2—028B007N; Inclusion 3—028B037N

**2096—Punchbowl-Locane-Nobuck association**  
**Positions on landscape:** Mountains

**Composition**  
**Major components:**  
Punchbowl cobbly loam, 8 to 15 percent slopes—40 percent  
Locane cobbly loam, 8 to 15 percent slopes—25 percent  
Nobuck very cobbly loam, 15 to 30 percent slopes—20 percent

**Contrasting inclusions:**  
Xerollic Camborthids, loamy-skeletal, mixed, frigid, 15 to 50 percent slopes—8 percent  
Xerollic Haplargids, loamy-skeletal, mixed, frigid, 8 to 15 percent slopes—4 percent  
Rock outcrop—3 percent

**Characteristics of the Punchbowl Soil**  
**Classification:** Lithic Xerollic Haplargids, loamy, mixed, frigid  
**Positions on landscape:** The upper, west- and south-facing side slopes of mountains  
**Parent material:** Residuum derived from andesite, dacite, rhyolite, and tuff  
**Slope:** 8 to 15 percent

**Elevation:** 6,500 to 7,000 feet  
**Average annual precipitation:** About 9 inches  
**Average annual air temperature:** About 45 degrees F  
**Frost-free season:** About 90 days  
**Dominant present vegetation:** Black sagebrush, bluegrass, bottlebrush squirreltail

**Typical Profile**  
**Depth:** 0 to 3 inches  
**Texture:** Cobby loam  
**Structure:** Platy  
**Consistency:** Slightly hard, very friable  
**Reaction:** Mildly alkaline  
**Salinity:** 0 to 2 millimhos per centimeter  
**Depth:** 3 to 7 inches  
**Texture:** Gravelly loam  
**Structure:** Subangular blocky  
**Consistency:** Slightly hard, friable  
**Reaction:** Moderately alkaline  
**Salinity:** 0 to 2 millimhos per centimeter  
**Depth:** 7 to 11 inches  
**Texture:** Gravelly clay loam  
**Structure:** Angular blocky  
**Consistency:** Hard, friable  
**Reaction:** Moderately alkaline  
**Salinity:** 0 to 2 millimhos per centimeter  
**Depth:** 11 inches  
**Material:** Unweathered bedrock

**Soil and Water Features**  
**Depth to bedrock:** 8 to 14 inches  
**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None  
**Permeability:** Moderately slow  
**Available water capacity:** 1.1 to 1.8 inches  
**Water-supplying capacity:** 8 inches  
**Runoff:** Medium  
**Hydrologic group:** D  
**Erosion factors (upper layer):**  
K value—0.24; T value—1; wind erodibility group—6  
**Hazard of erosion:** By water—slight; by wind—slight  
**Shrink-swell potential:** Moderate  
**Corrosivity:** To steel—high; to concrete—low  
**Potential for frost action:** Moderate

**Characteristics of the Locane Soil**  
**Classification:** Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid  
**Positions on landscape:** North-facing side slopes of mountains  
**Parent material:** Residuum derived from shale and conglomerate  
**Slope:** 8 to 15 percent
Elevation: 6,200 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Depth: 0 to 5 inches
Texture: Cobbly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 5 to 19 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 19 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.0 to 2.6 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Nobuck Soil
Classification: Xerollic Hapludands, loamy-skeletal, mixed, frigid
Positions on landscape: The lower side slopes of mountains
Parent material: Colluvium derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 6,200 to 6,800 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Indian ricegrass, bluegrass, black sagebrush

Typical Profile
Rock fragments on surface: 5 percent stones and boulders, 20 percent cobbles, 35 percent pebbles
Depth: 0 to 7 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral

Depth: 7 to 42 inches
Texture: Very gravelly clay loam, very gravelly sandy clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline

Depth: 42 to 60 inches
Texture: Very gravelly loam
Structure: Massive
Consistence: Hard, firm
Reaction: Moderately alkaline

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.6 to 5.5 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.15; T value—5; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Xerollic Camborthids, loamy-skeletal, mixed, frigid
Positions on landscape: Concave, colluvial side slopes of mountains
Distinctive present vegetation: Bluegrass, black sagebrush

Inclusion 2
Classification: Xerollic Hapludands, loamy-skeletal, mixed, frigid
Positions on landscape: Toe slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, Wyoming big sagebrush

Inclusion 3
Positions on landscape: Scattered peaks and knobs
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat
Suitability for Wildlife Habitat Elements

Punchbowl Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Locane Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Nobuck Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Punchbowl Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikees, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Locane Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikees, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Nobuck Soil
Range seeding: Poor—large stones
Roadfill: Fair—large stones, slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embarkments, dikees, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Punchbowl soil—VIIe, nonirrigated; Locane and Nobuck soils—VIIa, nonirrigated

Range site: Punchbowl and Nobuck soils—028B016N; Locane soil—024X005N; Inclusion 1—028B016N; Inclusion 2—028B007N; Inclusion 3—none

2097—Punchbowl-Ltca association
Positions on landscape: Mountains

Composition
Major components:
Punchbowl gravelly loam, 15 to 30 percent slopes—55 percent
Ltca cobbly loam, 15 to 30 percent slopes—30 percent
Contrasting inclusions:
Rock outcrop—8 percent
Lithic Xercoholic Haplargids, loamy, mixed, frigid, 8 to 15 percent slopes—5 percent
Xercoholic Haplargids, fine-loamy, mixed, frigid, 8 to 15 percent slopes—2 percent

Characteristics of the Punchbowl Soil
Classification: Lithic Xercoholic Haplargids, loamy, mixed, frigid
Positions on landscape: Crests and east- and south-facing side slopes of mountains
Parent material: Residuum derived from andesite, dacite, rhyolite, and tuff
Slope: 15 to 30 percent
Elevation: 6,300 to 7,100 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile
Rock fragments on surface: 25 percent pebbles
Depth: 0 to 3 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 7 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 7 to 11 inches
Texture: Gravelly clay loam
Structure: Angular clay loam
Consistence: Hard, friable
Reaction: Moderately alkaline
**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 11 inches

**Material:** Unweathered bedrock

---

**Soil and Water Features**

**Depth to bedrock:** 8 to 14 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Moderately slow

**Available water capacity:** 1.3 to 1.7 inches

**Water-supplying capacity:** 8 inches

**Runoff:** Rapid

**Hydrologic group:** D

**Erosion factors (upper layer):** K value—0.24; T value—1; wind erodibility group—6

**Hazard of erosion:** By water—moderate; by wind—slight

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Moderate

---

**Characteristics of the Itca Soil**

**Classification:** Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

**Positions on landscape:** North-facing side slopes of mountains

**Parent material:** Residuum derived from extrusive volcanic and pyroclastic rock

**Slope:** 15 to 30 percent

**Elevation:** 6,300 to 7,100 feet

**Average annual precipitation:** About 14 inches

**Average annual air temperature:** About 43 degrees F

**Frost-free season:** About 80 days

**Dominant present vegetation:** Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

**Site index for singleleaf pinyon:** 65

---

**Typical Profile**

**Rock fragments on surface:** 20 percent cobbles, 10 percent pebbles

**Depth:** 0 to 9 inches

**Texture:** Cobbly loam

**Structure:** Platy

**Consistence:** Slightly hard, very friable

**Reaction:** Neutral

**Depth:** 9 to 17 inches

**Texture:** Very gravelly clay, very gravelly clay loam

**Structure:** Prismatic

**Consistence:** Hard, firm

**Reaction:** Mildly alkaline

**Depth:** 17 inches

**Material:** Unweathered bedrock

---

**Soil and Water Features**

**Depth to bedrock:** 10 to 20 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Slow

**Available water capacity:** 1.8 to 2.3 inches

**Water-supplying capacity:** 10 inches

**Runoff:** Rapid

**Hydrologic group:** D

**Erosion factors (upper layer):** K value—0.24; T value—1; wind erodibility group—6

**Hazard of erosion:** By water—moderate; by wind—slight

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Moderate

---

**Contrasting Inclusions**

**Inclusion 1**

**Positions on landscape:** Escarpments, scattered peaks

**Distinctive present vegetation:** None

---

**Inclusion 2**

**Classification:** Lithic Xerollic Hapludands, loamy, mixed, frigid

**Positions on landscape:** The upper, south-facing side slopes of mountains

**Distinctive present vegetation:** Black sagebrush, singleleaf pinyon, Utah juniper

---

**Inclusion 3**

**Classification:** Xerollic Hapludands, fine-loamy, mixed, frigid

**Positions on landscape:** Intermountain drainageways

**Distinctive present vegetation:** Bluebunch wheatgrass, mountain big sagebrush

---

**Major Uses**

**Current uses:** Livestock grazing, wildlife habitat

**Potential foreseeable use:** Cordwood production

---

**Suitability for Wildlife Habitat Elements**

**Punchbowl Soil**

**Wild herbaceous plants (nonirrigated):** Fair

**Shrubs (nonirrigated):** Fair

---

**Itca Soil**

**Wild herbaceous plants (nonirrigated):** Fair

**Coniferous plants (nonirrigated):** Fair

**Shrubs (nonirrigated):** Fair

---

**Suitability and Limitations for Selected Uses**

---

**Punchbowl Soil**

**Range seeding:** Poor—droughty

**Roadfill:** Poor—depth to rock

**Topsoil:** Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Itca Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Punchbowl and Itca soils—VIIe, nonirrigated
Range site: Punchbowl soil—028B016N; Itca soil—025X061N; Inclusion 1—none; Inclusion 2—025X063N; Inclusion 3—028B007N

2099—Punchbowl-Roca-Rock outcrop association
Positions on landscape: Mountains

Composition
Major components:
Punchbowl very gravelly loam, 15 to 30 percent slopes—45 percent
Roca very cobbly loam, 15 to 30 percent slopes—25 percent
Rock outcrop—15 percent
Contrasting inclusions:
Lithic Xeric Torripalynths, loamy-skeletal, carbonatic, frigid, 30 to 50 percent slopes—6 percent
Xerolic Durargids, loamy, mixed, frigid (shallow), 15 to 30 percent slopes—6 percent
Typic Haploxerolls, loamy-skeletal, mixed, frigid, 30 to 50 percent slopes—3 percent

Characteristics of the Punchbowl Soil
Classification: Lithic Xerolic Haplargids, loamy, mixed, frigid
Positions on landscape: Convex summits, shoulder slopes, east- and west-facing side slopes of mountains

Parent material: Residuum derived from andesite, dacite, rhyolite, and tuff
Slope: 15 to 30 percent
Elevation: 6,200 to 7,400 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile
Rock fragments on surface: 55 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 7 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 7 to 11 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 11 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Roca Soil
Classification: Xerolic Haplargids, clayey-skeletal, montmorillonitic, frigid
**Positions on landscape:** South-facing side slopes of mountains

**Parent material:** Residuum derived from shale and chert

**Slope:** 15 to 30 percent

**Elevation:** 6,200 to 7,400 feet

**Average annual precipitation:** About 10 inches

**Average annual air temperature:** About 45 degrees F

**Frost-free season:** About 100 days

**Dominant present vegetation:** Bluegrass, bluebunch wheatgrass, big sagebrush

**Typical Profile**

**Rock fragments on surface:** 30 percent cobbles, 20 percent pebbles

**Depth:** 0 to 5 inches

**Texture:** Very cobbly loam

**Structure:** Subangular blocky

**Consistence:** Slightly hard, very friable

**Reaction:** Neutral

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 5 to 27 inches

**Texture:** Very gravelly clay loam, very gravelly clay

**Structure:** Angular blocky

**Consistence:** Hard, firm

**Reaction:** Mildly alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 27 inches

**Material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 20 to 40 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Very slow

**Available water capacity:** 2.6 to 3.4 inches

**Water-supplying capacity:** 11 inches

**Runoff:** Rapid

**Hydrologic group:** D

**Erosion factors (upper layer):** K value—0.10; T value—2; wind erodibility group—8

**Hazard of erosion:** By water—slight; by wind—slight

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Low

**Characteristics of the Rock Outcrop**

**Positions on landscape:** Knobs and eroded side slopes of mountains

**Dominant present vegetation:** None

**Contrasting Inclusions**

**Inclusion 1**

**Classification:** Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, frigid

**Positions on landscape:** Convex side slopes of mountains

**Distinctive present vegetation:** Indian ricegrass, black sagebrush

**Inclusion 2**

**Classification:** Xerolic Durargids, loamy, mixed, frigid (shallow)

**Positions on landscape:** The lower side slopes and toe slopes of mountains

**Distinctive present vegetation:** Needlegrass, bluebunch wheatgrass, big sagebrush

**Inclusion 3**

**Classification:** Typic Haploxerolls, loamy-skeletal, mixed, frigid

**Positions on landscape:** North-facing side slopes of mountains

**Distinctive present vegetation:** Idaho fescue, mountain big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Punchbowl Soil**

**Wild herbaceous plants (nonirrigated):** Fair

**Shrubs (nonirrigated):** Fair

**Roca Soil**

**Wild herbaceous plants (nonirrigated):** Fair

**Shrubs (nonirrigated):** Fair

**Suitability and Limitations for Selected Uses**

**Punchbowl Soil**

**Range seeding:** Poor—droughty, small stones

**Roadfill:** Poor—depth to rock

**Topsoil:** Poor—depth to rock, small stones, slope

**Daily cover for landfill:** Poor—depth to rock, small stones, slope

**Shallow excavations:** Severe—depth to rock, slope

**Local roads and streets:** Severe—depth to rock, slope

**Pond reservoir areas:** Severe—depth to rock, slope

**Embankments, dikes, and levees:** Severe—thin layer

**Sand:** Improbable source—excess fines

**Gravel:** Improbable source—excess fines

**Roca Soil**

**Range seeding:** Poor—large stones

**Roadfill:** Poor—depth to rock

**Topsoil:** Poor—small stones, slope

**Daily cover for landfill:** Poor—depth to rock, small stones, slope

**Shallow excavations:** Severe—depth to rock, slope

**Local roads and streets:** Severe—slope

**Pond reservoir areas:** Severe—slope

**Embankments, dikes, and levees:** Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**

Land capability classification: Punchbowl and Roca soils—VII, nonirrigated; Rock outcrop—VII, nonirrigated

Range site: Punchbowl soil—028B016N; Roca soil—024X028N; Rock outcrop—none; Inclusion 1—028B016N; Inclusion 2—025X014N; Inclusion 3—024X021N

---

2100—Grassval-Grina-Unsel Variant association

**Positions on landscape:** Fan piedmonts, low rolling hills

**Composition**

Major components:
Grassval gravelly loam, 4 to 8 percent slopes—35 percent
Grina very gravelly loam, eroded, 15 to 50 percent slopes—30 percent
Unsel Variant very gravelly loam, 15 to 30 percent slopes—20 percent

Contrasting inclusions:
Durargids, fine, montmorillonitic, mixed, 2 to 8 percent slopes—5 percent
Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic, 2 to 8 percent slopes—4 percent
Xerolic Haplargids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—3 percent
Puett fine sandy loam, 30 to 50 percent slopes—3 percent

**Characteristics of the Grassval Soil**

Classification: Xerolic Durargids, loamy, mixed, mesic (shallow)

Positions on landscape: Summits of fan piedmont remnants

Parent material: Mixed alluvium

Slope: 4 to 8 percent

Elevation: 5,300 to 5,600 feet

Average annual precipitation: About 8 inches

Average annual air temperature: About 46 degrees F

Frost-free season: About 100 days

Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, black sagebrush

**Typical Profile**

Rock fragments on surface: 10 percent pebbles

Depth: 0 to 4 inches

Texture: Gravelly loam

Structure: Platy

---

Consistence: Slightly hard, very friable

Reaction: Moderately alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 2

Depth: 4 to 13 inches

Texture: Gravelly clay loam, gravelly loam

Structure: Subangular blocky

Consistence: Hard, friable

Reaction: Moderately alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 2

Depth: 13 inches

Material: Indurated hardpan

**Soil and Water Features**

Depth to the hardpan: 8 to 14 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderately slow

Available water capacity: 1.6 to 1.9 inches

Water-supplying capacity: 8 inches

Runoff: Medium

Hydrologic group: D

Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Moderate

**Characteristics of the Grina Soil**

Classification: Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

Positions on landscape: Foothills along the outer margin of fan piedmont remnants

Parent material: Residuum derived from sedimentary rock

Slope: 15 to 50 percent

Elevation: 5,300 to 5,600 feet

Average annual precipitation: About 9 inches

Average annual air temperature: About 48 degrees F

Frost-free season: About 110 days

Dominant present vegetation: Bluegrass, Wyoming big sagebrush, Utah juniper, black sagebrush

Site index for Utah juniper: 18

**Typical Profile**

Rock fragments on surface: 55 percent pebbles

Depth: 0 to 3 inches

Texture: Very gravelly loam

Structure: Platy

Consistence: Slightly hard, friable

Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 3 to 14 inches
Texture: Silt loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 14 inches
Material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.7 to 2.5 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Unsel Variant Soil
Classification: Duric Haplargids, fine-loamy, mixed, mesic
Positions on landscape: South-facing side slopes of fan piedmont remnants
Parent material: Colluvium over residuum derived from tuffaceous sediment
Slope: 15 to 30 percent
Elevation: 5,300 to 5,600 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Typical Profile
Rock fragments on surface: 15 percent cobbles, 45 percent pebbles
Depth: 0 to 2 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 2 to 15 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 5 to 13

Depth: 15 to 22 inches
Texture: Gravelly loam
Structure: Massive
Consistency: Hard, firm
Reaction: Very strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 5 to 13

Depth: 22 inches
Material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.8 to 3.5 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.15; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Duric Natrargids, fine, montmorillonitic, mesic
Positions on landscape: Summits of hill remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Classification: Durorthic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Inclusion 3
Classification: Xerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: North-facing side slopes of fan piedmont remnants
Distinctive present vegetation: Black sagebrush
**Inclusion 4**

*Classification:* Xeric Torriothents, loamy, mixed (calcareous), mesic, shallow  
*Positions on landscape:* Eroded side slopes of hill remnants  
*Distinctive present vegetation:* Wyoming big sagebrush, black sagebrush  

**Minor Inclusion**

*Kind of material:* Exposed rock  
*Positions on landscape:* Crests and side slopes of hills  
*Distinctive present vegetation:* None  

**Major Current Uses**

Livestock grazing, wildlife habitat  

**Suitability for Wildlife Habitat Elements**

**Grassval Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor  

**Grina Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Coniferous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Fair  

**Unsel Variant Soil**

*Wild herbaceous plants (nonirrigated):* Poor  
*Shrubs (nonirrigated):* Poor  

**Suitability and Limitations for Selected Uses**

**Grassval Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—cemented pan  
*Topsoil:* Poor—cemented pan, small stones  
*Daily cover for landfill:* Poor—cemented pan, small stones  
*Shallow excavations:* Severe—cemented pan  
*Local roads and streets:* Severe—cemented pan  
*Pond reservoir areas:* Severe—cemented pan  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines  

**Grina Soil**

*Range seeding:* Poor—droughty, small stones  
*Roadfill:* Poor—depth to rock, low strength, slope  
*Topsoil:* Poor—depth to rock, small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, slope  
*Shallow excavations:* Severe—depth to rock, slope  
*Local roads and streets:* Severe—low strength, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—thin layer  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines  

**Unsel Variant Soil**

*Range seeding:* Poor—too arid, small stones  

**Roadfill:** Poor—depth to rock  
**Topsoil:** Poor—small stones, slope  
**Daily cover for landfill:** Poor—depth to rock, slope  
**Shallow excavations:** Severe—slope  
**Local roads and streets:** Severe—slope  
**Pond reservoir areas:** Severe—slope  
**Embankments, dikes, and levees:** Severe—thin layer  
**Sand:** Improbable source—excess fines  
**Gravel:** Improbable source—excess fines  

**Interpretive Groups**

*Land capability classification:* Grassval, Grina, and Unsel Variant soils—VIIa, nonirrigated  
*Range site:* Grassval soil—024X030N; Grina soil—025X059N; Unsel Variant soil—024X002N; Inclusion 1—024X002N; Inclusion 2—024X020N; Inclusion 3—024X030N; Inclusion 4—025X025N  

**2101—Grassval-Oxcord association**

*Positions on landscape:* Fan piedmonts  

**Composition**

*Major components:*  
Grassval fine sandy loam, 8 to 15 percent slopes—50 percent  
Oxcord very gravelly clay loam, eroded, 8 to 15 percent slopes—20 percent  
Oxcord gravelly fine sandy loam, 2 to 4 percent slopes—15 percent  

**Contrasting inclusions:**  
Allor gravelly loam, 2 to 8 percent slopes—7 percent  
Duric Natargids, clayey-skeletal, montmorillonitic, mesic, 15 to 30 percent slopes—4 percent  
Typic Durargids, fine, montmorillonitic, mesic, eroded, 30 to 50 percent slopes—4 percent  

**Characteristics of the Grassval Soil**

*Classification:* Xeric Torriothents, loamy, mixed, mesic, shallow  
*Positions on landscape:* The upper summits of fan piedmont remnants  
*Parent material:* Mixed alluvium  
*Slope:* 8 to 15 percent  
*Elevation:* 5,800 to 6,800 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 46 degrees F  
*Frost-free season:* About 100 days  
*Dominant present vegetation:* Indian ricegrass, bottlebrush squirreltail, black sagebrush  

**Typical Profile**

*Rock fragments on surface:* 10 percent pebbles  
*Depth:* 0 to 4 inches
Texture: Fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 4 to 13 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistency: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 13 inches
Material: Indurated hardpan

Soil and Water Features
Depth to the hardpan: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Oxcord Soil, Eroded
Classification: Duric Natrargids, fine, montmorillonitic, mesic
Positions on landscape: South-facing side slopes of fan
pedmont remnants
Parent material: Mixed alluvium that includes loess
Slope: 8 to 15 percent
Elevation: 5,800 to 6,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail,
shadscale, Wyoming big sagebrush, galleta

Typical Profile
Rock fragments on surface: 50 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly clay loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 3 to 30 inches
Texture: Clay, clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 30 to 60 inches
Texture: Very gravelly sandy loam, very gravelly loam
Structure: Massive
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 6 to 8 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—5;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Oxcord Soil
Classification: Duric Natrargids, fine, montmorillonitic, mesic
Positions on landscape: The lower summits of fan
pedmont remnants
Parent material: Mixed alluvium that includes loess
Slope: 2 to 4 percent
Elevation: 5,800 to 6,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail,
Indian ricegrass, shadscale, bud sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 8 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 8 to 34 inches
Texture: Clay, clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Strongly alkaline

Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 25 to 40
Depth: 34 to 60 inches
Texture: Very gravelly sandy loam, very gravelly loam
Structure: Massive
Consistence: Hard, firm
Reaction: Strongly alkaline

Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 6 to 8 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Fan aprons, inset fans
Distinctive present vegetation: Bluegrass, Wyoming big sagebrush

Inclusion 2
Classification: Duric N'tragids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Steepest parts of side slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Classification: Typic Durargids, fine, montmorillonitic, mesic, eroded
Positions on landscape: Scarps on fan piedmont remnants

Distinctive present vegetation: Shadscale, Wyoming big sagebrush, galleta

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Grassval Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Oxcorel Soil, Eroded
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Oxcorel Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Grassval Soil
Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Oxcorel Soil, Eroded
Range seeding: Poor—too arid, small stones, rooting depth
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Oxcorel Soil
Range seeding: Poor—too arid, rooting depth, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Grassval and Oxcoren, eroded, soils—VIIb, nonirrigated; Oxcoren soil—IVe, irrigated, and VIIb, nonirrigated
Range site: Grassval soil—028B011N; Oxcoren soil, eroded—024X045N; Oxcoren soil—028B017N; Inclusion 1—028B010N; Inclusion 2—024X025N; Inclusion 3—024X045N

2102—Grassval-Wieland association
Positions on landscape: Fan piedmonts

Composition
Major components:
Grassval gravelly loam, 2 to 8 percent slopes—55 percent
Wieland gravelly loam, 2 to 8 percent slopes—40 percent
Contrasting inclusions:
Duric Natragids, clayey-skeletal, montmorillonitic, mesic, 15 to 30 percent slopes—3 percent
Duric Natragids, fine, montmorillonitic, mesic, 2 to 8 percent slopes—2 percent

Characteristics of the Grassval Soil
Classification: Xerollic Durargids, loamy, mixed, mesic (shallow)
Positions on landscape: The upper summits of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 6,400 to 6,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, black sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 8 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline

Depth: 4 to 13 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistency: Hard, friable
Reaction: Moderately alkaline
Depth: 13 inches
Material: Indurated hardpan

Soil and Water Features
Depth to the hardpan: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Wieland Soil
Classification: Durixerolic Haplargids, fine, montmorillonitic, mesic
Positions on landscape: The lower summits of fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 8 percent
Elevation: 6,400 to 6,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 8 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Depth: 8 to 20 inches
Texture: Gravelly clay
Structure: Prismatic
Consistency: Hard, firm
Reaction: Moderately alkaline
Depth: 20 to 25 inches
Texture: Gravelly clay loam, gravelly sandy clay loam
 STRUCTURE: Massive  
CONSISTENCE: Hard, firm  
REACTION: Moderately alkaline  
DEPTH: 25 to 60 inches  
TEXTURE: Gravelly loam, gravelly sandy loam  
STRUCTURE: Massive  
CONSISTENCE: Hard, firm  
REACTION: Moderately alkaline  

SOIL AND WATER FEATURES

DEPTH TO A SEASONAL HIGH WATER TABLE: More than 60 inches  
FREQUENCY OF FLOODING: None  
PERMEABILITY: Slow  
AVAILABE WATER CAPACITY: 6 to 9 inches  
WATER-SUPPLYING CAPACITY: 9 inches  
RUNOFF: Medium  
HYDROLOGIC GROUP: C  
EROSION FACTORS (UPPER LAYER): K value—0.32; T value—5; wind erodibility group—6  
Hazard of erosion: By water—slight; by wind—slight  
SHRINK-SWELL POTENTIAL: High  
CORROSIVITY: To steel—high; to concrete—low  
POTENTIAL FOR FROST ACTION: Moderate  

CONTRASTING INCLUSIONS

INCLUSION 1  
CLASSIFICATION: Duric Natragids, clayey-skeletal, montmorillonitic, mesic  
POSITIONS ON LANDSCAPE: Side slopes of fan piedmont remnants  
DISTINCTIVE PRESENT VEGETATION: Shadscale, Wyoming big sagebrush  

INCLUSION 2  
CLASSIFICATION: Duric Natragids, fine, montmorillonitic, mesic  
POSITIONS ON LANDSCAPE: The lower summits of fan piedmont remnants  
DISTINCTIVE PRESENT VEGETATION: Shadscale, bud sagebrush

MAJOR CURRENT USES

LIVESTOCK GRAZING, WILDLIFE HABITAT

SUITABILITY FOR WILDLIFE HABITAT ELEMENTS

GRASSVAL SOIL

WILD HERBACEOUS PLANTS (NONIRRIGATED): Fair  
SHRUBS (NONIRRIGATED): Fair  

WIELAND SOIL

WILD HERBACEOUS PLANTS (NONIRRIGATED): Fair  
SHRUBS (NONIRRIGATED): Fair  

SUITABILITY AND LIMITATIONS FOR SELECTED USES

GRASSVAL SOIL

RANGE SEEDING: Poor—droughty  
ROADFILL: Poor—cemented pan  
TOPSOIL: Poor—cemented pan, small stones  
DAILY COVER FOR LANDFILL: Poor—cemented pan, small stones  
SHALLOW EXCAVATIONS: Severe—cemented pan  
LOCAL ROADS AND STREETS: Severe—cemented pan  
POND RESERVOIR AREAS: Severe—cemented pan, slope  
EMBANKMENTS, DIKES, AND LEVEES: Severe—thin layer  
SAND: Improbable source—excess fines  
GRAVEL: Improbable source—excess fines

WIELAND SOIL

RANGE SEEDING: Poor—rooting depth  
ROADFILL: Good  
TOPSOIL: Poor—small stones, area reclaim  
DAILY COVER FOR LANDFILL: Poor—small stones  
SHALLOW EXCAVATIONS: Moderate—too clayey  
LOCAL ROADS AND STREETS: Severe—low strength, shrink-swell  
POND RESERVOIR AREAS: Moderate—seepage, slope  
EMBANKMENTS, DIKES, AND LEVEES: Moderate—thin layer  
SAND: Improbable source—excess fines  
GRAVEL: Improbable source—excess fines

INTERPRETIVE GROUPS

LAND CAPABILITY CLASSIFICATION: Grassval soil—VII, nonirrigated; Wieland soil—IIIb, irrigated, and VIb, nonirrigated  
RANGE SITE: Grassval soil—028B011N; Wieland soil—028B010N; Inclusion 1—024X026N; Inclusion 2—028B017N

2104—Grassval-Punchbowl association

POSITIONS ON LANDSCAPE: Foothills, fan piedmonts

COMPOSITION

MAJOR COMPONENTS:

Grassval gravelly loam, 4 to 15 percent slopes—60 percent  
Punchbowl gravelly fine sandy loam, 15 to 30 percent slopes—25 percent

CONTRASTING INCLUSIONS:

Haplic Naturargids, loamy, mixed, mesic, shallow, 8 to 30 percent slopes—7 percent  
ROCK OUTCROP—4 percent  
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—2 percent  
Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—2 percent

CHARACTERISTICS OF THE GRASSVAL SOIL

CLASSIFICATION: Xerollic Durargids, loamy, mixed, mesic, shallow  
POSITIONS ON LANDSCAPE: Fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 15 percent
Elevation: 6,200 to 6,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, black sagebrush

Typical Profile
Rock fragments on surface: 10 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Depth: 4 to 13 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistence: Hard, friable
Reaction: Moderately alkaline
Depth: 13 inches
Material: Indurated hardpan

Soil and Water Features
Depth to the hardpan: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Punchbowl Soil
Classification: Lithic Xerollic Haplargids, loamy, mixed, frigid
Positions on landscape: Summits and side slopes of foothills
Parent material: Residuum derived from andesite, dacite, rhyolite, and tuff
Slope: 15 to 30 percent
Elevation: 6,200 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days

Dominant present vegetation: Black sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile
Rock fragments on surface: 25 percent pebbles
Depth: 0 to 3 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 7 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 7 to 11 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 11 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1; wind erodibility group—4
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Haplic Natrargids, loamy, mixed, mesic, shallow
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, small rabbitbrush, Wyoming big sagebrush
Inclusion 2
Positions on landscape: Scattered peaks and eroded side slopes of fan piedmont remnants
Distinctive present vegetation: None

Inclusion 3
Classification: Xerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Bluegrass, basin big sagebrush

Inclusion 4
Classification: Xerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The lower inset fans, narrow fan skirts
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Grassval Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Punchbowl Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Grassval Soil
Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Punchbowl Soil
Range seeding: Poor—droughty, depth to rock
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Grassval soil—VIIa, nonirrigated; Punchbowl soil—VIIe, nonirrigated
Range site: Grassval soil—028B011N; Punchbowl soil—028B016N; Inclusion 1—024X045N; Inclusion 2—none; Inclusion 3—028B003N; Inclusion 4—028B010N

2105—Grassval-Glyphs-Muni association
Positions on landscape: Fan piedmonts

Composition
Major components:
Grassval gravelly loam, 4 to 8 percent slopes—50 percent
Glyphs fine sandy loam, 2 to 8 percent slopes—20 percent
Muni fine sandy loam, 2 to 4 percent slopes—15 percent
Contrasting inclusions:
Orovada fine sandy loam, 2 to 4 percent slopes—7 percent
Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 2 to 4 percent slopes—5 percent
Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—3 percent

Characteristics of the Grassval Soil
Classification: Xerollic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: The upper summits of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 8 percent
Elevation: 6,300 to 6,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, black sagebrush

Typical Profile
Rock fragments on surface: 10 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 4 to 13 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistency: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 13 inches
Material: Indurated hardpan

**Soil and Water Features**

Depth to the hardpan: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Glyphs Soil**

Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: The lower part of fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 8 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needleandthread, bluegrass, Wyoming big sagebrush

**Typical Profile**

Depth: 0 to 7 inches
Texture: Fine sandy loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 7 to 17 inches
Texture: Gravelly clay loam, gravelly sandy clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 17 to 37 inches
Texture: Gravelly sandy loam
Structure: Massive
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 37 to 60 inches
Texture: Very gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow over very rapid
Available water capacity: 4.7 to 6.5 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Muni Soil**

Classification: Haploxeollic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: The intermediate areas of fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 4 percent
Elevation: 6,300 to 7,100 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Needlegrass, bluegrass, Wyoming big sagebrush

**Typical Profile**

Rock fragments on surface: 30 percent pebbles
Depth: 0 to 3 inches
Texture: Fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 3 to 18 inches
Texture: Sandy clay loam, clay loam, loam
Structure: Prismatic
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 18 to 49 inches
Material: Cemented hardpan
Depth: 49 to 60 inches
Texture: Very gravelly loamy sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.5 to 3.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Cambhithids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Basin big sagebrush, bluegrass

Inclusion 3
Classification: Xerollic Cambhithids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Basin wildrye, bluegrass, basin big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Grassval Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Glyphs Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Muni Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Grassval Soil
Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Glyphs Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Muni Soil
Range seeding: Fair—droughty, too arid
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, area reclaim
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Grassval soil—VIIa, nonirrigated; Glyphs soil—IIIe, irrigated, and VIc,
nonirrigated; Muni soil—IVe, irrigated, and VIIa, nonirrigated
Range site: Grassval soil—028B011N; Glyphs and Muni soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B011N; Inclusion 3—028B003N

2110—Isolde-Davey association
Positions on landscape: Alluvial flats covered by eolian sand

Composition

Major components:
Isolde fine sand, 4 to 30 percent slopes—60 percent
Davey fine sandy loam, 0 to 4 percent slopes—25 percent

Contrasting inclusions:
Orovada fine sandy loam, 0 to 4 percent slopes—6 percent
Creelman silt loam, 0 to 2 percent slopes—5 percent
Xerollic Camborthids, sandy-skeletal, mixed, mesic, 0 to 4 percent slopes—4 percent

Characteristics of the Isolde Soil
Classification: Typic Torrripsamments, mixed, mesic
Positions on landscape: Dunes overlying sand sheets
Parent material: Eolian sand derived from various kinds of rock
Slope: 4 to 30 percent
Elevation: 6,000 to 6,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, black greasewood, fourwing saltbush, hairy horsebrush

Typical Profile
Depth: 0 to 6 inches
Texture: Fine sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 6 to 60 inches
Texture: Fine sand, sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very rapid

Available water capacity: 3.6 to 5.4 inches
Water-supplying capacity: 6 inches
Runoff: Slow
Hydrologic group: A
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Davey Soil
Classification: Xerollic Camborthids, sandy, mixed, mesic
Positions on landscape: Sand sheets overlying alluvial flats
Parent material: Mixed alluvium
Slope: 0 to 4 percent
Elevation: 6,000 to 6,100 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, needleandthread, Wyoming big sagebrush

Typical Profile
Depth: 0 to 5 inches
Texture: Fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter

Depth: 5 to 14 inches
Texture: Fine sandy loam, sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter

Depth: 14 to 67 inches
Texture: Fine sand, loamy fine sand
Structure: Massive
Consistence: Soft, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.2 to 5.7 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Indian ricegrass, Wyoming big sagebrush

Inclusion 2
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Fan skirts near areas of Playas
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Classification: Xerollic Camborthids, sandy-skeletal, mixed, mesic
Positions on landscape: Offshore bar remnants
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Isolde Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Davey Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Isolde Soil
Range seeding: Poor—soil blowing, too sandy, droughty
Roadfill: Fair—slope
Topsoil: Poor—too sandy, slope
Daily cover for landfill: Poor—seepage, too sandy, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, piping
Sand: Probable source
Gravel: Improbable source—too sandy

Davey Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—thin layer

Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Isolde soil—VII, nonirrigated; Davey soil—III, irrigated, and V1c, nonirrigated
Range site: Isolde soil—027X023N; Davey soil—024X017N; Inclusion 1—028B010N; Inclusion 2—024X002N; Inclusion 3—028B010N

2540—Buffaran-Wieland association

Positions on landscape: Fan piedmonts

Composition

Major components:
Buffaran cobbly loam, 2 to 8 percent slopes—50 percent
Wieland gravelly loam, 8 to 15 percent slopes—40 percent
Contrasting inclusions:
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 4 to 8 percent slopes—6 percent
Xerollic Haplurgids, fine, montmorillonitic, mesic, 2 to 8 percent slopes—4 percent

Characteristics of the Buffaran Soil

Classification: Xerollic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: Summits and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,700 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Thurber needlegrass, bottlebrush squirreltail, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 15 percent cobbles, 15 percent pebbles
Depth: 0 to 4 inches
Texture: Cobble loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 20 to 60 inches
Texture: Gravelly loam, gravelly sandy loam
Structure: Massive
Consistence: Hard, firm
Reaction: Moderately alkaline

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6 to 9 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.32; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Xerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Xerollic Haplargids, fine, montmorillonitic mesic
Positions on landscape: Foot slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Buffaran Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Wieland Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Buffaran Soil
Range seeding: Poor—droughty, rooting depth
Roadfill: Poor—cemented pan, low strength
Topsoil: Poor—cemented pan, small stones
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, low strength
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Wieland Soil
Range seeding: Poor—rooting depth
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Buffaran soil—VIIa, nonirrigated; Wieland soil—Vil, nonirrigated
Range site: Buffaran and Wieland soils—024X005N; Inclusions 1 and 2—024X005N

2541—Buffaran-Zoesta association
Positions on landscape: Fan piedmonts

Composition

Major components:
Buffaran gravely loam, 4 to 8 percent slopes, very stony—60 percent
Zoesta cobby loam, 8 to 15 percent slopes—25 percent Contrasting inclusions:
Xerolic Haplargids, fine-loamy, mixed, mesic, 30 to 50 percent slopes—7 percent
Xerolic Camborthids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—5 percent
Xerolic Haplargids, clayey-skeletal, montmorillonitic, frigid, 4 to 15 percent slopes—3 percent

Characteristics of the Buffaran Soil

Classification: Xerolic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: The lower summits and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 8 percent
Elevation: 6,200 to 6,700 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Thurber needlegrass, bottlebrush squirreltail, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 2 percent stones and boulders, 15 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 4 to 15 inches
Texture: Clay, gravelly clay, gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 15 to 60 inches
Material: Indurated hardpan
Structure: Massive
Consistence: Extremely hard, extremely firm

Soil and Water Features

Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.8 to 2.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Zoesta Soil

Classification: Xerolic Paleargids, fine, montmorillonitic, frigid
Positions on landscape: The higher summits of fan piedmont remnants
Parent material: Alluvium and colluvium derived from various kinds of rock
Slope: 8 to 15 percent
Elevation: 6,200 to 6,800 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, low sagebrush

Typical Profile
Rock fragments on surface: 15 percent cobbles, 15 percent pebbles
Depth: 0 to 7 inches
Texture: Cobbly loam
Structure: Prismatic
Consistency: Very hard, very firm
Reaction: Moderately alkaline
Depth: 31 to 60 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Massive
Consistence: Very hard, very firm
Reaction: Moderately alkaline

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 7 to 9 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Xerollic Hapludands, fine-loamy, mixed, mscopic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Needlegrass, bluebunch wheatgrass, big sagebrush

Inclusion 2
Classification: Xerollic Camborthids, loamy-skeletal, mixed, moscopic
Positions on landscape: Inset fans
Distinctive present vegetation: Bluegrass, basin wildrye, basin big sagebrush

Inclusion 3
Classification: Xerollic Hapludands, clayey-skeletal, montmorillonitic, frigid

Positions on landscape: Fan aprons
Distinctive present vegetation: Needlegrass, bluebunch wheatgrass, basin big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Buffaran Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Zoesta Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Buffaran Soil
Range seeding: Poor—droughty, rooting depth
Roadfill: Poor—cemented pan, low strength
Topsoil: Poor—cemented pan, small stones
Daily cover for landfills: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, low strength
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Zoesta Soil
Range seeding: Poor—rooting depth
Roadfill: Fair—shrink-swell
Topsoil: Poor—small stones, area reclaim
Daily cover for landfills: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Buffaran soil—VIIa, nonirrigated; Zoesta soil—IVa, irrigated, and VIIa, nonirrigated
Range site: Buffaran soil—024X005N; Zoesta soil—024X0018N; Inclusion 1—024X035N; Inclusion 2—025X003N; Inclusion 3—025X014N

2542—Buffaran-Chiara association
Positions on landscape: Partial ballenas
Composition

Major components:
Buffaran gravelly loam, 2 to 8 percent slopes—40 percent
Buffaran very gravelly fine sandy loam, 8 to 15 percent slopes—30 percent
Chiarra very gravelly loam, 8 to 15 percent slopes—15 percent
Contrasting inclusions:
Wieland gravelly loam, 4 to 8 percent slopes—8 percent
Durixerolic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—7 percent

Characteristics of the Buffaran Soil, Gravelly

Classification: Xerolic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: Summits of partial ballenas
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 6,200 to 6,700 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Thuberm needlegrass, Indian ricegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 15 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 5 to 16 inches
Texture: Clay, gravelly clay, gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline
Depth: 16 to 27 inches
Material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 27 to 60 inches
Material: Cemented hardpan
Structure: Platy
Consistency: Very hard, very firm

Soil and Water Features

Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches

Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Buffaran Soil, Very Gravelly

Classification: Xerolic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: Shoulder slopes and north-facing side slopes of partial ballenas
Parent material: Mixed alluvium
Slope: 8 to 15 percent
Elevation: 6,200 to 6,700 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Thuberm needlegrass, Indian ricegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 15 percent pebbles
Depth: 0 to 5 inches
Texture: Very gravelly fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 5 to 16 inches
Texture: Clay, gravelly clay, gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline
Depth: 16 to 27 inches
Material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 27 to 60 inches
Material: Cemented hardpan
Structure: Platy
Consistency: Very hard, very firm

Soil and Water Features

Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.2 to 2.0 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Chiara Soil
Classification: Xerollic Durorthids, loamy, mixed, mesic, shallow
Positions on landscape: South-facing side slopes of partial ballenas
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 8 to 15 percent
Elevation: 6,200 to 6,700 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Rock fragments on surface: 5 percent cobbles, 40 percent pebbles
Depth: 0 to 4 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 4 to 13 inches
Texture: Silt loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 13 to 60 inches
Material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm

Soil and Water Features
Depth to the hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.0 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D

Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Durixerollic Haplorgids, fine, montmorillonitic, mesic
Positions on landscape: Foot slopes of partial ballenas
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Buffaran Soil, Gravelly
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Buffaran Soil, Very Gravelly
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Chiara Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Buffaran Soil, Gravelly
Range seeding: Poor—droughty, rooting depth
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—cemented pan, too clayey, small stones
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, shrink-swell, low strength
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Buffaran Soil, Very Gravelly
Range seeding: Poor—droughty, rooting depth, small stones
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—cemented pan, too clayey, small stones
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, shrink-swell, low strength
Pond reservoir areas: Severe—cemented pan, slope
Embarkments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Chiara Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan, slope
Embarkments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Bufran and Chiara soils—VIII, nonirrigated
Range site: Buffran and Chiara soils—02BB010N;
Inclusions 1 and 2—02BB010N

2543—Bufran-Spasprey-Allor association
Positions on landscape: Fan piedmonts

Composition
Major components:
Bufran gravelly loam, 2 to 8 percent slopes—35 percent
Spasprey gravelly fine sandy loam, 2 to 4 percent slopes—30 percent
Allor gravelly loam, 2 to 8 percent slopes—20 percent
Contrasting inclusions:
Orovada fine sandy loam, 0 to 2 percent slopes—7 percent
Ricert very fine sandy loam, 0 to 2 percent slopes—4 percent
Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 8 percent slopes—4 percent

Characteristics of the Bufran Soil
Classification: Xerolic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: The upper summits of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 6,200 to 6,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Thuber needlegrass, Indian ricegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 15 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 5 to 16 inches
Texture: Clay, gravelly clay, gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 16 to 27 inches
Material: Indurated hardpan
Structure: Massive
Consistence: Extremely hard, extremely firm
Depth: 27 to 60 inches
Material: Cemented hardpan
Structure: Platy
Consistence: Very hard, very firm

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Spasprey Soil
Classification: Haploxerolic Durargids, fine-loamy, mixed, mesic
Positions on landscape: The intermediate areas of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 4 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 5 to 26 inches
Texture: Clay loam, sandy clay loam
Structure: Prismatic
Consistence: Hard, friable
Reaction: Mildly alkaline
Depth: 26 to 33 inches
Material: Cemented hardpan
Depth: 33 to 60 inches
Texture: Fine sandy loam
Structure: Massive
Consistence: Hard, friable
Reaction: Moderately alkaline

Soil and Water Features
Depth to the hardpan: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 5 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.32; T value—3; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Allor Soil
Classification: Durixerolic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: The lower summits of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 6,200 to 6,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 12 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 12 to 34 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 34 to 60 inches
Texture: Gravelly loamy sand, very gravelly loamy sand
Structure: Massive
Consistence: Very hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5.0 to 6.4 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Duric Natargids, fine-loamy, mixed, mesic
Positions on landscape: Convex areas on the lower fan piedmont remnants
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Inclusion 3
Classification: Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Buffaran Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Spasprey Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Allor Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Buffaran Soil
Range seeding: Poor—droughty, rooting depth
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—cemented pan, too clayey, small stones
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, shrink-swell, low strength
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Spasprey Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—cemented pan, area reclaim, too clayey
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—shrink-swell, low strength, frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Allor Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, shrink-swell
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Buffaran soil—Vlls, nonirrigated; Spasprey soil—Ills, irrigated, and Vlls, nonirrigated; Allor soil—Ille, irrigated, and Vlle, nonirrigated
Range site: Buffaran, Spasprey, and Allor soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B017N; Inclusion 3—028B010N

2545—Buffaran-Pineval association
Positions on landscape: Fan piedmonts

Composition
Major components:
Buffaran gravelly loam, 4 to 15 percent slopes—70 percent
Pineval gravelly loam, 15 to 30 percent slopes—15 percent
Contrasting inclusions:
Xerollic Durargids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—7 percent
Durixerolic Camborthids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—5 percent
Durordic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 4 to 15 percent slopes—3 percent

Characteristics of the Buffaran Soil
Classification: Xerollic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: Summits and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 15 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Thurer needlegrass, bottlebrush squirreltail, Indian ricegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 15 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 5 to 16 inches
Texture: Clay, gravelly clay, gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline
Depth: 16 to 27 inches
Material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 27 to 60 inches
Material: Cemented hardpan
Structure: Platy
Consistency: Very hard, very firm

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Pineal Soil
Classification: Durixerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 15 to 30 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 10 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.2 to 4.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Xericolic Durargids, loamy-skeletal, mixed, mesic
Positions on landscape: Summits on the upper part of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Durixerolic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Durorthic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Inset fans near the front of mountains
Distinctive present vegetation: Basin wildrye, bluegrass, basin big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat
Suitability for Wildlife Habitat Elements

Buffaran Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Pineval Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Buffaran Soil
Range seeding: Poor—droughty, rooting depth
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—cemented pan, too clayey, small stones
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, shrink-swell, low strength
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Pineval Soil
Range seeding: Fair—too arid, erodes easily, small stones
Roadfill: Fair—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups

Land capability classification: Buffaran soil—Vlls, nonirrigated; Pineval soil—Vle, nonirrigated
Range site: Buffaran and Pineval soils—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—028B003N

2546—Buffaran-Spasprey-Locane association
Positions on landscape: Foothills, fan piedmonts

Composition

Major components:
Buffaran very gravelly fine sandy loam, 2 to 4 percent slopes—45 percent
Spasprey gravelly fine sandy loam, 4 to 8 percent slopes—25 percent
Locane gravelly loam, 8 to 15 percent slopes—15 percent

Contrasting inclusions:
Durixerollic Camborthids, loamy-skeletal, mixed, mesic,
2 to 8 percent slopes—10 percent
Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 2 to 4 percent slopes—5 percent

Characteristics of the Buffaran Soil

Classification: Xerollic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: The lower summits of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 4 percent
Elevation: 6,400 to 6,700 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 10 percent cobbles, 45 percent pebbles
Depth: 0 to 5 inches
Texture: Very gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 5 to 16 inches
Texture: Clay, gravelly clay, gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 16 to 27 inches
Material: Indurated hardpan
Structure: Massive
Consistence: Extremely hard, extremely firm
Depth: 27 to 60 inches
Material: Cemented hardpan
Structure: Platy
Consistence: Very hard, very firm

Soil and Water Features

Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.8 to 2.2 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Spasprey Soil
Classification: Haploxerollc Durargids, fine-loamy, mixed, mesic
Positions on landscape: The upper summits of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 8 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 5 to 26 inches
Texture: Clay loam, sandy clay loam
Structure: Prismatic
Consistency: Hard, friable
Reaction: Mildly alkaline
Depth: 26 to 33 inches
Material: Cemented hardpan
Depth: 33 to 60 inches
Texture: Fine sandy loam
Structure: Massive
Consistency: Hard, friable
Reaction: Moderately alkaline

Soil and Water Features
Depth to the hardpan: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4 to 5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Inset fans near the front of foothills
Distinctive present vegetation: Basin wildrye, bluegrass, basin big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Buffaran Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Spasprey Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Locane Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Buffaran Soil
Range seeding: Poor—droughty, rooting depth, small stones
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—cemented pan, too clayey, small stones
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, shrink-swell, low strength
Pond reservoir areas: Severe—cemented pan
Embarkments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Spasprey Soil
Range seeding: Fair—too arid, small stones
Roadfill: Good
Topsoil: Fair—cemented pan, area reclaim, too clayey
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—outbanks cave
Local roads and streets: Moderate—shrink-swell, low strength, frost action
Pond reservoir areas: Severe—seepage
Embarkments, dikes, and levees: Severe—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Locane Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Buffaran and Locane soils—VII, nonirrigated; Spasprey soil—II, irrigated, and VI, nonirrigated
Range site: Buffaran, Spasprey, and Locane soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B003N

2547—Buffaran-Desatoya association
Positions on landscape: Fan piedmonts

Composition
Major components:
Buffaran gravelly loam, 4 to 8 percent slopes—50 percent
Desatoya very gravelly loam, 8 to 15 percent slopes—35 percent
Contrasting inclusions:
Haploxerolic Durargids, fine-loamy, mixed, mesic, 4 to 8 percent slopes—8 percent
Aridic Argixerolls, fine-loamy, mixed, mesic, 4 to 8 percent slopes—6 percent
Jung very gravelly loam, 15 to 30 percent slopes—1 percent

Characteristics of the Buffaran Soil
Classification: Xerolic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: The lower summits and south-facing side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 8 percent
Elevation: 6,200 to 6,400 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 15 percent pebbles
Depth: 0 to 2 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 1 millimhos per centimeter
Depth: 2 to 16 inches
Texture: Clay, gravelly clay, gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 16 to 27 inches
Material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 27 to 60 inches
Material: Cemented hardpan
Structure: Platy
Consistency: Very hard, very firm

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.8 to 2.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Desatoya Soil
Classification: Durixerollic Haplargids, clayey over
loamy-skeletal, montmorillonitic, mesic
Positions on landscape: The upper summits and north-
facing side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 8 to 15 percent
Elevation: 6,200 to 6,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, needlegrass,
Indian ricegrass, black sagebrush

Typical Profile
Rock fragments on surface: 5 percent cobbles, 45 percent pebbles

Depth: 0 to 6 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 6 to 13 inches
Texture: Gravelly clay, gravelly clay loam
Structure: Prismatic
Consistency: Hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 13 to 60 inches
Texture: Stratified extremely gravelly sandy loam to very
gravelly loamy sand
Structure: Massive
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.0 to 5.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—5;
wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Haploxerollic Durargids, fine-loamy,
mixed, mesic
Positions on landscape: Fan aprons
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Arid Argixerolls, fine-loamy, mixed,
mesic
Positions on landscape: Foot slopes of fan piedmont
remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Lithic Xerollic Haplargids, clayey-skeletal,
montmorillonitic, mesic
Positions on landscape: Foothill remnants
**Distinctive present vegetation:** Bluegrass, black sagebrush

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Buffaran Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Desatoya Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses**

**Buffaran Soil**
*Range seeding:* Poor—droughty, rooting depth
*Roadfill:* Poor—cemented pan, shrink-swell, low strength
*Topsoil:* Poor—cemented pan, small stones
*Daily cover for landfill:* Poor—cemented pan, hard to pack
*Shallow excavations:* Severe—cemented pan
*Local roads and streets:* Severe—cemented pan, shrink-swell, low strength
*Pond reservoir areas:* Severe—cemented pan
*Embankments, dikes, and levees:* Severe—thin layer
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Desatoya Soil**
*Range seeding:* Poor—rooting depth, small stones
*Roadfill:* Fair—large stones
*Topsoil:* Poor—small stones, area reclaim
*Daily cover for landfill:* Poor—small stones
*Shallow excavations:* Moderate—large stones, slope
*Local roads and streets:* Moderate—slope, frost action, large stones
*Pond reservoir areas:* Severe—slope
*Embankments, dikes, and levees:* Severe—seepage
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Interpretive Groups**
*Land capability classification:* Buffaran and Desatoya soils—Vls, nonirrigated
*Range site:* Buffaran soil—027X008N; Desatoya soil—027X032N; Inclusions 1 and 2—027X008N; Inclusion 3—027X032N

**Composition**

**Major components:**
*Buffaran very gravelly fine sandy loam, 4 to 8 percent slopes—45 percent*
*Tenabo gravelly very fine sandy loam, 4 to 8 percent slopes—25 percent*
*Pineval gravelly fine sandy loam, 4 to 8 percent slopes—15 percent*

**Contrasting inclusions:**
*Durixerollic Haplargids, fine-loamy, mixed, mesic, 8 to 15 percent slopes—6 percent*
*Orovada fine sandy loam, 2 to 8 percent slopes—5 percent*
*Lithic Xerollic Haplargids, clayey, montmorillonitic, mesic, 4 to 15 percent slopes—4 percent*

**Characteristics of the Buffaran Soil**
*Classification:* Xerollic Durargids, clayey, montmorillonitic, mesic, shallow
*Positions on landscape:* The upper summits of fan piedmont remnants
*Parent material:* Mixed alluvium
*Slope:* 4 to 8 percent
*Elevation:* 5,700 to 6,000 feet
*Average annual precipitation:* About 8 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Thibber needlegrass, bottlebrush squirreltail, Indian ricegrass, Wyoming big sagebrush

**Typical Profile**
*Rock fragments on surface:* 45 percent pebbles
*Depth:* 0 to 5 inches
*Texture:* Very gravelly fine sandy loam
*Structure:* Platy
*Consistency:* Slightly hard, very friable
*Reaction:* Mildly alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Depth:* 5 to 16 inches
*Texture:* Clay, gravelly clay, gravelly clay loam
*Structure:* Prismatic
*Consistency:* Hard, firm
*Reaction:* Mildly alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Depth:* 16 to 27 inches
*Material:* Indurated hardpan
*Structure:* Massive
*Consistency:* Extremely hard, extremely firm
*Depth:* 27 to 60 inches
*Material:* Cemented hardpan

**2548—Buffaran-Tenabo-Pineval association**
*Positions on landscape:* Fan piedmonts
Structure: Platy
Consistency: Very hard, very firm

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Tenabo Soil
Classification: Typic Nadurargids, loamy, mixed, mesic, shallow
Positions on landscape: The lower summits of fan piedmont remnants
Parent material: Thin loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 4 to 8 percent
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 4 to 15 inches
Texture: Clay loam, gravelly clay loam, silty clay loam
Structure: Prismatic
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 15 to 28 inches
Material: Indurated hardpan

Structure: Platy
Consistency: Extremely hard, extremely firm
Depth: 28 to 60 inches
Texture: Stratified very gravelly sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 46 to 60

Soil and Water Features
Depth to the hardpan: 9 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.5 to 2.9 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Pineal Soil
Classification: Durixerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Foot slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 8 percent
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 10 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Ace: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.1 to 4.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B

Erosion factors (upper layer): K value—0.24; T value—5
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants

Distinctive present vegetation: Bottlebrush squirreltail, small rabbitbrush, black sagebrush

Inclusion 2
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans

Distinctive present vegetation: Indian ricegrass, Wyoming big sagebrush

Inclusion 3
Classification: Lithic Xerollic Haplargids, clayey, montmorillonitic, mesic
Positions on landscape: Low knolls

Distinctive present vegetation: Bottlebrush squirreltail, small rabbitbrush, black sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Buffaran Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Tenabo Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Pineal Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Buffaran Soil
Range seeding: Poor—droughty, rooting depth, small stones
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—cemented pan, too clayey, small stones
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, shrink-swell, low strength
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Tenabo Soil
Range seeding: Poor—too arid, droughty, excess sodium
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones, too sandy
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess sodium, excess salt
Sand: Probable source
Gravel: Probable source

Pineal Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Buffaran soil—VIIa, nonirrigated; Tenabo soil—IVe, irrigated, and VIIa,
nonirrigated; Pineal soil—IVe, irrigated, and VIs, nonirrigated
Range site: Buffaran and Pineal soils—028B010N;
Tenabo soil—024X002N; Inclusion 1—024X030N;
Inclusion 2—028B010N; Inclusion 3—024X030N

2554—Laped-Hooplitte-Osoll association

Positions on landscape: Foothills

Composition

Major components:
Laped very gravelly fine sandy loam, 8 to 15 percent
slopes—40 percent
Hooplitte very gravelly fine sandy loam, 8 to 15 percent
slopes—30 percent
Osoll very gravelly fine sandy loam, 8 to 15 percent
slopes—20 percent

Contrasting inclusions:
Rock outcrop—5 percent
Typic Durorthids, loamy, mixed, mesic, shallow, 8 to 15
percent slopes—5 percent

Characteristics of the Laped Soil

Classification: Typic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: Convex, lower side slopes of
foothills
Parent material: Colluvium and residuum derived from
tuff and andesite
Slope: 8 to 15 percent
Elevation: 5,900 to 6,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail,
shadscale, bud sagebrush

Typical Profile

Rock fragments on surface: 45 percent pebbles

Depth: 0 to 6 inches
Texture: Very gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 18 inches
Texture: Gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 2 to 10

Depth: 18 to 23 inches
Material: Indurated hardpan

Soil and Water Features

Depth to the hardpan: 14 to 20 inches
Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60
inches

Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.8 to 2.3 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D

Erosion factors (upper layer): K value—0.15; T value—1;
wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Hooplitte Soil

Classification: Lithic Xerollic Haplargids, loamy-skeletal,
mixed, mesic
Positions on landscape: Convex, upper side slopes of
foothills
Parent material: Residuum derived from rhyolitic rock
Slope: 8 to 15 percent
Elevation: 5,900 to 6,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail,
black sagebrush

Typical Profile

Rock fragments on surface: 10 percent cobbles, 45
percent pebbles

Depth: 0 to 4 inches
Texture: Very gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 4 to 8 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 8 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 6 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.6 to 0.8 inch
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Osoll Soil
Classification: Typic Durorthids, loamy-skeletal, mixed, mesic, shallow
Positions on landscape: Concave toe slopes of foothills
Parent material: Colluvium that includes loess over residuum derived from various kinds of rock
Slope: 8 to 15 percent
Elevation: 5,900 to 6,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, shadecloth, bud sagebrush

Typical Profile
Rock fragments on surface: 5 percent cobbles, 50 percent pebbles
Depth: 0 to 5 inches
Texture: Very gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 5 to 12 inches
Texture: Very gravelly loam, very gravelly fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 12 to 35 inches
Material: Indurated hardpan
Structure: Platy
Consistence: Extremely hard, extremely firm
Depth: 35 inches
Texture: Unweathered bedrock

Soil and Water Features
Depth to the hardpan: 8 to 14 inches
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 0.6 to 1.0 inch
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Positions on landscape: Scattered knobs
Distinctive present vegetation: None
Inclusion 2
Classification: Typic Durorthids, loamy, mixed, mesic, shallow
Positions on landscape: Eroded, south-facing side slopes of foothills
Distinctive present vegetation: Shadecloth, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Laped Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor
Hooplite Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor
Osoll Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses
Laped Soil
Range seeding: Poor—too arid, small stones, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—cemented pan, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock, cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Hooplite Soil**

**Range seeding:** Poor—to too arid, doughty, small stones
**Roadfill:** Poor—depth to rock
**Topsoil:** Poor—depth to rock, small stones
**Daily cover for landfill:** Poor—depth to rock
**Shallow excavations:** Severe—depth to rock
**Local roads and streets:** Severe—depth to rock
**Pond reservoir areas:** Severe—depth to rock, slope
**Embarkments, dikes, and levees:** Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Osoll Soil**

**Range seeding:** Poor—doughty, small stones, too arid
**Roadfill:** Poor—depth to rock
**Topsoil:** Poor—cemented pan, small stones
**Daily cover for landfill:** Poor—depth to rock, small stones
**Shallow excavations:** Severe—depth to rock, cemented pan
**Local roads and streets:** Severe—cemented pan
**Pond reservoir areas:** Severe—cemented pan, slope
**Embarkments, dikes, and levees:** Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**

**Land capability classification:** Laped, Hooplite, and Osoll soils—VII, nonirrigated
**Range site:** Laped and Osoll soils—024X002N; Hooplite soil—028B016N; Inclusion 1—none; Inclusion 2—024X002N

**2555—Laped-Colbar association**

**Positions on landscape:** Foothills

**Composition**

**Major components:**
Laped very cobby loam, 15 to 30 percent slopes—55 percent
Colbar very cobby loam, 30 to 50 percent slopes—30 percent
**Contrasting inclusions:**
Typic Hapludands, fine, montmorillonitic, mesic, 2 to 8 percent slopes—8 percent
Typic Durudands, loamy-skeletal, mixed, mesic, 30 to 50 percent slopes—5 percent
Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow, 30 to 50 percent slopes—2 percent

**Characteristics of the Laped Soil**

**Classification:** Typic Durargids, loamy, mixed, mesic, shallow
**Positions on landscape:** Convex crests, shoulder slopes, and south-facing side slopes of foothills
**Parent material:** Colluvium and residuum derived from tuff and andesite
**Slope:** 15 to 30 percent
**Elevation:** 5,200 to 6,400 feet
**Average annual precipitation:** About 8 inches
**Average annual air temperature:** About 49 degrees F
**Frost-free season:** About 110 days
**Dominant present vegetation:** Bottlebrush squirreltail, shadscale, bud sagebrush

**Typical Profile**

**Rock fragments on surface:** 30 percent cobbles, 10 percent pebbles
**Depth:** 0 to 6 inches
**Texture:** Very cobby loam
**Structure:** Prismatic
**Consistence:** Hard, firm
**Reaction:** Moderately alkaline
**Salinity:** 0 to 2 millimhos per centimeter
**Sodicity (SAR):** 0 to 2
**Depth:** 6 to 18 inches
**Texture:** Gravelly clay loam
**Structure:** Prismatic
**Consistence:** Hard, firm
**Reaction:** Moderately alkaline
**Salinity:** 0 to 4 millimhos per centimeter
**Sodicity (SAR):** 2 to 10
**Depth:** 18 to 23 inches
**Material:** Indurated hardpan
**Depth:** 23 inches
**Material:** Unweathered bedrock

**Soil and Water Features**

**Depth to the hardpan:** 14 to 20 inches
**Depth to bedrock:** 20 to 30 inches
**Depth to a seasonal high water table:** More than 60 inches
**Frequency of flooding:** None
**Permeability:** Moderately slow
**Available water capacity:** 2.2 to 3.5 inches
**Water-supplying capacity:** 7 inches
**Runoff:** Rapid
**Hydrologic group:** D
**Erosion factors (upper layer):** K value—0.17; T value—1; wind erodibility group—7
**Hazard of erosion:** By water—moderate; by wind—slight
**Shrink-swell potential:** Moderate
Landers County, Nevada, South Part

Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Colbar Soil
Classification: Xerolitic Hapludands, fine-loamy, mixed, mesic
Positions on landscape: Concave, north-facing side slopes of foothills
Parent material: Colluvium over residuum derived from rhyolite and andesite
Slope: 30 to 50 percent
Elevation: 5,200 to 6,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Needlegrass, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 3 inches
Texture: Very cobbly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 3 to 22 inches
Texture: Cobbly loam, gravelly clay loam
Structure: Subangular blocks
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 22 to 26 inches
Texture: Gravelly loam, cobbly loam
Structure: Subangular blocks
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 26 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid

Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Typic Hapludands, fine, montmorillonicitic, mesic
Positions on landscape: Colluvial fans between hills
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Classification: Typic Durudands, loamy-skeletal, mixed, mesic
Positions on landscape: Concave, south-facing side slopes of foothills
Distinctive present vegetation: Shadscale, Wyoming big sagebrush

Inclusion 3
Classification: Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow
Positions on landscape: Concave, eroded side slopes of hills
Distinctive present vegetation: Small rabbitbrush, Wyoming big sagebrush, galleta

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Laped Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Colbar Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Laped Soil
Range seeding: Poor—large stones, droughty, too arid
Roadfill: Poor—depth to rock
Topsoil: Poor—cemented pan, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, cemented pan, slope
Local roads and streets: Severe—cemented pan, slope
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Colbar Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—large stones, slope
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Laped and Colbar soils—Vils, nonirrigated
Range site: Laped soil—024X002N; Colbar soil—024X005N; Inclusion 1—024X002N; Inclusion 2—024X026N; Inclusion 3—024X045N

2570—Colbar-Atlow-Burrita association
Positions on landscape: Mountains

Composition
Major components:
Colbar gravelly loam, 15 to 30 percent slopes—50 percent
Atlow very cobbly loam, 15 to 30 percent slopes—20 percent
Burrita very cobbly loam, 30 to 50 percent slopes—15 percent
Contrasting inclusions:
Burrita very cobbly loam, 4 to 8 percent slopes—7 percent
Rock outcrop—3 percent
Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, shallow, 30 to 50 percent slopes—3 percent
Lithic Haplargids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—2 percent

Characteristics of the Colbar Soil
Classification: Xerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Concave east-, west-, and lower south-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolite and andesite
Slope: 15 to 30 percent
Elevation: 6,000 to 6,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Dominant present vegetation: Needlegrass, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Depth: 6 to 16 inches
Texture: Cobbly loam, gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Depth: 16 to 21 inches
Texture: Gravelly loam, cobbly loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Depth: 21 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Atlow Soil
Classification: Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Shoulder slopes and north-facing side slopes of mountains
Parent material: Residuum derived from chert, shale, and altered rhyolitic tuff
Slope: 15 to 30 percent
Elevation: 6,000 to 6,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Black sagebrush, bluegrass, Indian ricegrass
Typical Profile

**Rock fragments on surface:** 20 percent cobbles, 20 percent pebbles

**Depth:** 0 to 3 inches

**Texture:** Very cobbly loam

**Structure:** Platy

**Consistence:** Slightly hard, very friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 3 to 14 inches

**Texture:** Very gravelly clay loam

**Structure:** Angular blocky

**Consistence:** Hard, friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 14 inches

**Texture:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 14 to 20 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Slow

**Available water capacity:** 1.1 to 1.4 inches

**Water-supplying capacity:** 8 inches

**Runoff:** Rapid

**Hydrologic group:** D

**Erosion factors (upper layer):** K value—0.15; T value—1; wind erodibility group—8

**Hazard of erosion:** By water—slight; by wind—slight

**Shrink-swell potential:** Low

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Moderate

**Characteristics of the Burrita Soil**

**Classification:** Lithic Xerollic Hapludalfs, clayey-skeletal, montmorillonitic, mesic

**Positions on landscape:** Convex, upper, south-facing side slopes of mountains

**Parent material:** Residue from interbedded chert, quartzite, and sandstone

**Slope:** 30 to 50 percent

**Elevation:** 6,000 to 6,500 feet

**Average annual precipitation:** About 9 inches

**Average annual temperature:** About 48 degrees F

**Frost-free season:** About 110 days

**Dominant present vegetation:** Needlegrass, bottlebrush, squirreltail, Wyoming big sagebrush

**Typical Profile**

**Rock fragments on surface:** 25 percent cobbles, 30 percent pebbles

**Depth:** 0 to 7 inches

**Texture:** Very cobbly loam

**Structure:** Subangular blocky

**Consistence:** Slightly hard, friable

**Reaction:** Mildly alkaline

**Depth:** 7 to 14 inches

**Texture:** Very cobbly clay, very gravelly clay loam

**Structure:** Angular blocky

**Consistence:** Hard, firm

**Reaction:** Moderately alkaline

**Depth:** 14 inches

**Material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 14 to 20 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Slow

**Available water capacity:** 1.2 to 1.5 inches

**Water-supplying capacity:** 9 inches

**Runoff:** Rapid

**Hydrologic group:** D

**Erosion factors (upper layer):** K value—0.15; T value—1; wind erodibility group—8

**Hazard of erosion:** By water—severe; by wind—slight

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Low

**Contrasting Inclusions**

**Inclusion 1**

**Classification:** Lithic Xerollic Hapludalfs, clayey-skeletal, montmorillonitic, mesic

**Positions on landscape:** Crests of mountains

**Distinctive present vegetation:** Wyoming big sagebrush

**Inclusion 2**

**Positions on landscape:** Scattered knobs

**Distinctive present vegetation:** None

**Inclusion 3**

**Classification:** Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, shallow

**Positions on landscape:** Erosional balloons

**Distinctive present vegetation:** Utah juniper, Wyoming big sagebrush

**Inclusion 4**

**Classification:** Lithic Hapludalfs, loamy-skeletal, mixed, mesic

**Positions on landscape:** Convex toe slopes of mountains

**Distinctive present vegetation:** Shadscale, bud sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat
Suitability for Wildlife Habitat Elements

Colbar Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Atlow Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Burrita Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Colbar Soil
Range seeding: Fair—too arid, drougthy
Roadfill: Poor—depth to rock
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Atlow Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Burrita Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Colbar soil—Vle, nonirrigated; Atlow and Burrita soils—Vlls, nonirrigated

Range site: Colbar and Burrita soils—024X005N; Atlow soil—024X030N; Inclusion 1—024X005N; Inclusion 2—none; Inclusion 3—024X002N; Inclusion 4—025X062N

2603—Grina-Genaw association

Positions on landscape: Rolling hills

Composition

Major components:
Grina gravelly loam, 15 to 30 percent slopes—45 percent
Genaw gravelly loam, 15 to 30 percent slopes—40 percent

Contrasting inclusions:
Lithic Xerolic Haplugepts, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—7 percent
Aridic Haploxerolls, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent
Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 30 to 50 percent slopes—3 percent

Characteristics of the Grina Soil

Classification: Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow
Positions on landscape: Convex, eroded side slopes of hills
Parent material: Residuum derived from sedimentary rock
Slope: 15 to 30 percent
Elevation: 5,900 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Wyoming big sagebrush, Utah juniper, singleleaf pinyon, ephedra
Site index for Utah juniper: 30

Typical Profile

Rock fragments on surface: 30 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 5 to 14 inches
Texture: Silt loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 14 inches
Material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.8 to 2.1 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Gena Soil
Classification: Xerollic Hapludalfs, loamy, mixed, mesic, shallow
Positions on landscape: Convex, stable side slopes of hills
Parent material: Loess mantle over residuum derived from tuffaceous sediment
Slope: 15 to 30 percent
Elevation: 5,900 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, Wyoming big sagebrush, singleleaf pinyon

Typical Profile
Rock fragments on surface: 25 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 11 to 16 inches
Texture: Very gravelly loam
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 16 inches
Material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Lithic Xerollic Hapludalfs, loamy-skeletal, mixed, mesic
Positions on landscape: Crests of hills
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Aridic Haploxerolls, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Inset fans

Inclusion 3
Classification: Xeric Torrithents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Concave, eroded side slopes of hills
Distinctive present vegetation: Bluegrass, small rabbitbrush, Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Grina Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Poor
Shrubs (nonirrigated): Fair

Genaw Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Grina Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock, low strength, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfills: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—low strength, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Genaw Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfills: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Grina and Genaw soils—
Vile, nonirrigated
Range site: Grina soil—025X059SN; Genaw soil—
028B010N; Inclusion 1—028B010N; Inclusion 2—
028B003N; Inclusion 3—024X035N

2640—Rasille-Kelk association
Positions on landscape: Inset fans dissecting fan skirts

Composition

Major components:
Rasille silt loam, gravelly substratum, 0 to 2 percent
slopes—45 percent
Kelk silt loam, occasionally flooded, 0 to 2 percent
slopes—40 percent
Contrasting inclusions:
Batan silt loam, 0 to 2 percent slopes—8 percent
Broyles very fine sandy loam, 0 to 2 percent slopes—4
percent
Wendane silt loam, frequently flooded, 0 to 2 percent
slopes—3 percent

Characteristics of the Rasille Soil
Classification: Durixerolic Camborthids, coarse-silty,
mixed, mesic
Positions on landscape: Inset fans at margins of fan
skirts and alluvial flats
Parent material: Silty alluvium derived from loess and
various kinds of rock
Slope: 0 to 2 percent
Elevation: 5,200 to 5,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail,
Indian ricegrass, needlegrass, Wyoming big
sagebrush

Typical Profile
Depth: 0 to 6 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 15 inches
Texture: Silt loam
Structure: Prismatic
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 15 to 41 inches
Texture: Silt loam, very fine sandy loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Depth: 41 to 60 inches
Texture: Stratified fine sandy loam to very gravelly
coarse sand
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60
inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 7.6 to 9.3 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Kelk Soil
Classification: Durixerollic Camborthids, fine-silty, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess that includes volcanic ash, mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,200 to 5,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Basin big sagebrush, basin wildrye, rubber rabbitbrush, black greasewood

Typical Profile
Depth: 0 to 14 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 14 to 51 inches
Texture: Silt loam
Structure: Massive
Consistency: Hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 51 to 60 inches
Texture: Silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Occasional for brief to long periods in February through June
Permeability: Slow
Available water capacity: 10 to 12 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 2
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirt margins
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Classification: Aeric Halquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flats
Distinctive present vegetation: Black greasewood, basin wildrye, rubber rabbitbrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Rasille Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Kelk Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Rasille Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—area reclaim, excess salt
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, frost action
Pond reservoir areas: Severe—seepage
Embarkments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Kelk Soil
Range seeding: Fair—too arid, excess salt
Roadfill: Poor—low strength
Topsoil: Good
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—low strength, flooding
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Rasille soil—IIC, irrigated, and Vlc, nonirrigated; Kelk soil—Ilw, irrigated, and Vlw, nonirrigated
Range site: Rasille soil—028B010N; Kelk soil—024X006N; Inclusion 1—024X003N; Inclusion 2—024X002N; Inclusion 3—024X007N

2672—Zoesta Variant-Jung-Trunk association
Positions on landscape: Foothills

Composition
Major components:
Zoesta Variant gravelly loam, 15 to 30 percent slopes—35 percent
Jung very cobbly fine sandy loam, 8 to 15 percent slopes—30 percent
Trunk cobbly loam, 30 to 50 percent slopes—20 percent

Contrasting inclusions:
Aridic Argixerolls, fine, montmorillonitic, frigid, 30 to 50 percent slopes—8 percent
Durotrophic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 50 to 75 percent slopes—5 percent
Rock outcrop—2 percent

Characteristics of the Zoesta Variant Soil
Classification: Xerollic Paleargids, fine, montmorillonitic, mesic
Positions on landscape: Convex side slopes of foothills
Parent material: Colluvium over residuum derived from metavolcanic rock
Slope: 15 to 30 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, needlegrass, black sagebrush

Typical Profile
Rock fragments on surface: 5 percent cobbles, 45 percent pebbles

Depth: 0 to 8 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter

Depth: 8 to 27 inches
Texture: Clay
Structure: Prismatic
Consistency: Very hard, very firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 27 to 36 inches
Texture: Clay, clay loam
Structure: Subangular blocky
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 36 to 60 inches
Texture: Gravelly loam, gravelly sandy loam
Structure: Massive
Consistency: Very hard, firm
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 6 to 8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.28; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Jung Soil
Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Convex crests and shoulder slopes of foothills
Parent material: Residuum derived from volcanic and metavolcanic rock
Slope: 8 to 15 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

Typical Profile

Rock fragments on surface: 25 percent cobbles, 10 percent pebbles
Depth: 0 to 8 inches
Texture: Very cobbly fine sandy loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter

Depth: 8 to 19 inches
Texture: Very cobbly clay
Structure: Prismatic
Consistence: Very hard, firm
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 19 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Trunk Soil

Classification: Xerolic Haplargids, fine, montmorillonitic, mesic
Positions on landscape: Slightly concave, west-facing, upper side slopes of foothills
Parent material: Colluvium and residuum derived from quartzite and chert
Slope: 30 to 50 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, bottlebrush squirreltail, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 15 percent cobbles, 10 percent pebbles
Depth: 0 to 3 inches
Texture: Cobbly loam
Structure: Granular
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 30 inches
Texture: Gravelly clay, gravelly clay loam
Structure: Prismatic
Consistence: Very hard, very firm
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 30 inches
Texture: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3 to 4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1

Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: The upper, concave, north-facing side slopes of foothills
Distinctive present vegetation: Singleleaf pinyon, Utah juniper, mountain big sagebrush

Inclusion 2

Classification: Durothic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Convex, eroded side slopes of foothills
Distinctive present vegetation: Indian ricegrass, Wyoming big sagebrush, shadscale

Inclusion 3

Positions on landscape: Scattered peaks
Distinctive present vegetation: None
Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Zoesta Variant Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Jung Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Trunk Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Zoesta Variant Soil
Range seeding: Poor—rooting depth
Roadfill: Fair—slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—too clayey, hard to pack, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Jung Soil
Range seeding: Poor—large stones, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Trunk Soil
Range seeding: Poor—rooting depth, erodes easily
Roadfill: Poor—depth to rock, low strength, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, hard to pack, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Zoesta Variant soil—VIIe, nonirrigated; Jung and Trunk soils—VII, nonirrigated
Range site: Zoesta Variant and Jung soils—024X030N; Trunk soil—024X005N; Inclusion 1—025X062N; Inclusion 2—024X045N; Inclusion 3—none

2681—Tessfive-Puett-Grina association
Positions on landscape: Dissected, rolling hills

Composition

Major components:
Tessfive gravelly loam, 8 to 30 percent slopes—40 percent
Puett gravelly sandy loam, 15 to 50 percent slopes—25 percent
Grina gravelly loam, eroded, 15 to 30 percent slopes—20 percent

Contrasting inclusions:
Orovada gravelly very fine sandy loam, 2 to 8 percent slopes—6 percent
Unsel Variant very gravelly loam, 15 to 30 percent slopes—5 percent
Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 2 to 8 percent slopes—4 percent

Characteristics of the Tessfive Soil
Classification: Lithic Xeric Torriorthents, loamy, mixed (calcareous), mesic
Positions on landscape: Convex, rolling crests and upper side slopes of hills
Parent material: Residuum derived from tuffaceous sediment that includes loess
Slope: 8 to 30 percent
Elevation: 5,300 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, bluegrass, black sagebrush

Typical Profile
Rock fragments on surface: 35 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly loam
Structure: Plan
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 6 to 16 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 16 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.8 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1;
wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Puett Soil
Classification: Xeric Torriorthents, loamy, mixed
(calcareous), mesic, shallow
Positions on landscape: Convex, eroded side slopes of hills
Parent material: Residuum derived from tuff and sandstone
Slope: 15 to 50 percent
Elevation: 5,300 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Wyoming big sagebrush, Indian ricegrass

Typical Profile
Rock fragments on surface: 25 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 4 to 15 inches
Texture: Coarse sandy loam, sandy loam, gravelly loam
Structure: Massive
Consistency: Soft, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 15 inches
Material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1.5 to 2.5 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1;
wind erodibility group—4
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Grina Soil
Classification: Xeric Torriorthents, loamy, mixed
(calcareous), mesic, shallow
Positions on landscape: Concave, lower, rolling side slopes of hills
Parent material: Residuum derived from sedimentary rock
Slope: 15 to 30 percent
Elevation: 5,300 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Wyoming big sagebrush, Utah juniper, singleleaf pinyon
Site index for Utah juniper: 18

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 3 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 3 to 14 inches
Texture: Silt loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 14 inches
Material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.8 to 2.1 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1;
wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerolic Camborthids, coarse-loamy,
mixed, mesic
Positions on landscape: Inset fans dissecting hills
Distinctive present vegetation: Wyoming big sagebrush,
bluegrass

Inclusion 2
Classification: Duric Haplargids, fine-loamy, mixed,
mesic
Positions on landscape: Convex, south-facing side
slopes of hills
Distinctive present vegetation: Shadscale, bud
sagebrush

Inclusion 3
Classification: Xeric Torriorthents, loamy-skeletal, mixed
(calcareous), mesic
Positions on landscape: Areas adjacent to channels
Distinctive present vegetation: Wyoming big sagebrush,
spiny hopsage

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Tessfive Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Puett Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Grina Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Poor
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Tessfive Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock

Puett Soil
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small
stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Puett Soil
Range seeding: Poor—droughty, too arid
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—seepage,
piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Grina Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock, low strength, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—low strength, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Tessfive, Puett, and Grina
soils—Vile, nonirrigated
Range site: Tessfive soil—024X030N; Puett soil—
025X025N; Grina soil—025X059N; Inclusion 1—
028B010N; Inclusion 2—024X002N; Inclusion 3—
024X020N

2683—Tessfive-Genaw-Orovada association
Positions on landscape: Dissected, rolling hills

Composition

Major components:
Tessfive gravelly loam, 15 to 30 percent slopes—35
percent
Genaw gravelly loam, 15 to 30 percent slopes—35
percent
Orovada fine sandy loam, 2 to 8 percent slopes—15
percent
Contrasting inclusions:
Xerolitic Durargids, loamy, mixed, mesic, shallow, 4 to 15 percent slopes—5 percent
Puett fine sandy loam, 15 to 30 percent slopes—5 percent
Duric Natrargids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—5 percent

**Characteristics of the Tessive Soil**

**Classification:** Lithic Xeric Torriorthents, loamy, mixed (calcareous), mesic  
**Positions on landscape:** Convex, higher, north-facing  
**Parent material:** Residual derived from tuffaceous sediment that includes loess  
**Slope:** 15 to 30 percent  
**Elevation:** 5,400 to 5,800 feet  
**Average annual precipitation:** About 9 inches  
**Average annual air temperature:** About 49 degrees F  
**Frost-free season:** About 110 days  
**Dominant present vegetation:** Indian ricegrass, bluegrass, black sagebrush

**Typical Profile**

**Rock fragments on surface:** 35 percent pebbles  
**Depth:** 0 to 6 inches  
**Texture:** Gravelly loam  
**Structure:** Platy  
**Consistency:** Soft, very friable  
**Reaction:** Moderately alkaline  
**Salinity:** 0 to 2 millimhos per centimeter  
**Sodicity (SAR):** 0 to 2  
**Depth:** 6 to 16 inches  
**Texture:** Gravelly loam  
**Structure:** Subangular blocky  
**Consistency:** Slightly hard, friable  
**Reaction:** Moderately alkaline  
**Salinity:** 0 to 2 millimhos per centimeter  
**Sodicity (SAR):** 0 to 2  
**Depth:** 16 inches  
**Texture:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 10 to 20 inches  
**Depth to the seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Moderate  
**Available water capacity:** 1.8 to 2.4 inches  
**Water-supplying capacity:** 8 inches  
**Runoff:** Rapid  
**Hydrologic group:** D  
**Erosion factors (upper layer):** K value—0.24; T value—1; wind erodibility group—5  
**Hazard of erosion:** By water—moderate; by wind—slight  
**Shrink-swell potential:** Low  
**Corrosivity:** To steel—high; to concrete—low  
**Potential for frost action:** Moderate  

**Characteristics of the Genaw Soil**

**Classification:** Xerolitic Haplargids, loamy, mixed, mesic, shallow  
**Positions on landscape:** Slightly concave side slopes of rolling hills  
**Parent material:** Loess mantle over residuum derived from tuffaceous sediment  
**Slope:** 15 to 30 percent  
**Elevation:** 5,400 to 5,800 feet  
**Average annual precipitation:** About 9 inches  
**Average annual air temperature:** About 47 degrees F  
**Frost-free season:** About 110 days  
**Dominant present vegetation:** Indian ricegrass, bottlebrush squirreltail, Wyoming big sagebrush

**Typical Profile**

**Rock fragments on surface:** 25 percent pebbles  
**Depth:** 0 to 6 inches  
**Texture:** Gravelly loam  
**Structure:** Platy  
**Consistency:** Slightly hard, very friable  
**Reaction:** Moderately alkaline  
**Salinity:** 0 to 2 millimhos per centimeter  
**Sodicity (SAR):** 0 to 2  
**Depth:** 6 to 11 inches  
**Texture:** Gravelly loam, gravelly clay loam  
**Structure:** Angular blocky  
**Consistency:** Slightly hard, very friable  
**Reaction:** Moderately alkaline  
**Salinity:** 0 to 4 millimhos per centimeter  
**Sodicity (SAR):** 0 to 2  
**Depth:** 11 to 16 inches  
**Texture:** Very gravelly loam  
**Structure:** Massive  
**Consistency:** Hard, friable  
**Reaction:** Strongly alkaline  
**Salinity:** 0 to 4 millimhos per centimeter  
**Sodicity (SAR):** 0 to 5  
**Depth:** 16 inches  
**Material:** Weathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 14 to 20 inches  
**Depth to the seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Moderate  
**Available water capacity:** 1.9 to 2.4 inches  
**Water-supplying capacity:** 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Orovada Soil**

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans dissecting rolling hills
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,400 to 5,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 8 to 10 inches
Water-supplying capacity: 9 inches
Runoff: Medium

Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Contrasting Inclusions**

**Inclusion 1**

Classification: Xerollic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: Convex crests of rolling hills
Distinctive present vegetation: Black sagebrush

**Inclusion 2**

Classification: Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow
Positions on landscape: Erosional balloons
Distinctive present vegetation: Indian ricegrass, Wyoming big sagebrush, black sagebrush

**Inclusion 3**

Classification: Duric Natargids, loamy-skeletal, mixed, mesic
Positions on landscape: Convex, south-facing side slopes of hills
Distinctive present vegetation: Indian ricegrass, shadscale, bud sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Tessfve Soil**

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Genaw Soil**

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Orovada Soil**

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Tessfve Soil**

Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Genaw Soil**
*Range seeding:* Poor—droughty
*Roadfill:* Poor—depth to rock
*Topsoil:* Poor—depth to rock, small stones, slope
*Daily cover for landfill:* Poor—depth to rock, small stones, slope
*Shallow excavations:* Severe—depth to rock, slope
*Local roads and streets:* Severe—slope
*Pond reservoir areas:* Severe—depth to rock, slope
*Embankments, dikes, and levees:* Severe—thin layer
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Orovada Soil**
*Range seeding:* Fair—too arid
*Roadfill:* Good
*Topsoil:* Fair—small stones, thin layer
*Daily cover for landfill:* Good
*Shallow excavations:* Slight
*Local roads and streets:* Moderate—frost action, flooding
*Pond reservoir areas:* Moderate—seepage, slope
*Embankments, dikes, and levees:* Severe—piping
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Interpretive Groups**

**Land capability classification:** Tessfive and Genaw soils—Vllle, nonirrigated; Orovada soil—Ille, irrigated, and Vlc, nonirrigated

**Range site:** Tessfive soil—024X030N; Genaw and Orovada soils—028B010N; Inclusion 1—028B011N; Inclusion 2—025X025N; Inclusion 3—028B017N

---

**Characteristics of the Tessfive Soil**

*Classification:* Lithic Xeric Torriorthents, loamy, mixed (calcareous), mesic
*Positions on landscape:* Convex, north- and east-facing side slopes of hills
*Parent material:* Residuum that is derived from tuffaceous sediment and includes loess
*Slope:* 2 to 8 percent
*Elevation:* 5,600 to 6,000 feet
*Average annual precipitation:* About 8 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 110 days

**Dominant present vegetation:** Indian ricegrass, bluegrass, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 35 percent pebbles
*Depth:* 0 to 6 inches
*Texture:* Gravelly loam
*Structure:* Platy
*Consistence:* Soft, very friable
*Reaction:* Moderately alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Sodicity (SAR):* 0 to 2
*Depth:* 6 to 16 inches
*Texture:* Gravelly loam
*Structure:* Subangular blocky
*Consistence:* Slightly hard, friable
*Reaction:* Moderately alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Sodicity (SAR):* 0 to 2
*Depth:* 16 inches
*Maintenance:* Unweathered bedrock

**Soil Water Features**

*Depth to bedrock:* 10 to 20 inches
*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderate
*Available water capacity:* 1.8 to 2.4 inches
*Water-supplying capacity:* 8 inches
*Runoff:* Medium
*Hydrologic group:* D
*Erosion factors (upper layer):* K value—0.24; T value—1;
wind erodibility group—5
*Hazard of erosion:* By water—slight; by wind—slight
*Shrink-swell potential:* Low
*Corrosivity:* To steel—high; to concrete—low
*Potential for frost action:* Moderate

**Characteristics of the Perlor Soil**

*Classification:* Typic Torriorthents, loamy, mixed (calcareous), mesic, shallow

---

**2684—Tessfive-Perlor-Orovada association**

*Positions on landscape:* Dissected, rolling hills

**Composition**

*Major components:*
Tessfive gravelly loam, 2 to 8 percent slopes—40 percent
Perlor fine sandy loam, 8 to 15 percent slopes—25 percent
Orovada gravelly very fine sandy loam, 2 to 4 percent slopes—20 percent
Constrasting inclusions:
Puett fine sandy loam, 15 to 30 percent slopes—8 percent
Durixerollic Hapludolls, fine, montmorillonitic, mesic, 4 to 8 percent slopes—4 percent
Durixerollic Hapludolls, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—3 percent
Positions on landscape: South-facing side slopes of hills
Parent material: Loess-capped residuum derived from
tuffaceous sediment
Slope: 8 to 15 percent
Elevation: 5,600 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass,
bluegrass, shadscale, bud sagebrush

Typical Profile
Rock fragments on surface: 10 percent pebbles
Depth: 0 to 7 inches
Texture: Fine sandy loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 4
Depth: 7 to 14 inches
Texture: Loam, sandy loam, gravelly sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 14 inches
Material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.6 to 2.3 inches
Water-supplying capacity: 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Orovida Soil
Classification: Durixerolic Cambithods, coarse-loamy,
mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of
volcanic ash over mixed alluvium

Slope: 2 to 4 percent
Elevation: 5,600 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Wyoming big sagebrush,
bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Gravely very fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8 to 10 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.37; T value—5;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Xeric Torriorthents, loamy, mixed
(calcareous), mesic, shallow
Positions on landscape: Convex, eroded side slopes of
hills
Distinctive present vegetation: Rabbitbrush, bottlebrush, squirreltail, Wyoming big sagebrush, black sagebrush

Inclusion 2
Classification: Durixerolic Haplargids, fine, montmorillonitic, mesic
Positions on landscape: Summits of hills
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Durixerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Toe slopes of hills
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Tessfive Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Perlor Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Tessfive Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Moderate—depth to rock, frost action
Pond reservoir areas: Severe—depth to rock
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Perlor Soil
Range seeding: Poor—too arid, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock
Shallow excavations: Severe—depth to rock
Local roads and streets: Moderate—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Tessfive and Perlor soils—VIIIs, nonirrigated; Orovada soil—Ile, irrigated, and Vtc, nonirrigated
Range site: Tessfive soil—024X030N; Perlor soil—024X002N; Orovada soil—028B010N; Inclusion 1—025X025N; Inclusions 2 and 3—028B010N

2690—Itca Variant-Reluctan-Handy association

Positions on landscape: Mountains

Composition

Major components:
Itca Variant very gravelly loam, 15 to 30 percent slopes—45 percent
Reluctan very gravelly loam, 15 to 30 percent slopes—25 percent
Handy gravelly loam, 8 to 15 percent slopes—15 percent
Contrasting inclusions:
Arctic Argixerolls, clayey, montmorillonitic, frigid, shallow, 4 to 15 percent slopes—8 percent
Arctic Argixerolls, fine, montmorillonitic, frigid, 4 to 15 percent slopes—4 percent
Pachic Argixerolls, loamy-skeletal, mixed, frigid, 30 to 50 percent slopes—3 percent

Characteristics of the Itca Variant Soil

Classification: Arctic Argixerolls, loamy, mixed, frigid, shallow
Positions on landscape: Convex side slopes of mountains
Parent material: Residuum derived from tuffaceous sediment
Slope: 15 to 30 percent
Elevation: 6,200 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, mountain big sagebrush, singleleaf pinyon
Site index for common trees: Singleleaf pinyon—45; Utah juniper—45

Typical Profile
Rock fragments on surface: 5 percent cobbles, 30 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Depth: 3 to 12 inches
Texture: Gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 12 inches
Material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.8 to 2.2 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Reluctant Soil
Classification: Xerolithic Hapludands, fine-loamy, mixed, frigid
Positions on landscape: Concave, north-facing side slopes of mountains
Parent material: Colluvium over residuum derived from rhyolitic rock
Slope: 15 to 30 percent
Elevation: 6,200 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush, snowberry

Typical Profile
Rock fragments on surface: 10 percent cobbles, 35 percent pebbles
Depth: 0 to 9 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Neutral
Depth: 9 to 27 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 27 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3 to 4 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.15; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Handy Soil
Classification: Xerologic Hapludands, fine-loamy, mixed, frigid
Positions on landscape: Mountain valley fan remnants
Parent material: Alluvium and colluvium derived from various kinds of rock
Slope: 8 to 15 percent
Elevation: 6,200 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needlegrass, western wheatgrass, big sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reactivity: Mildly alkaline

Depth: 4 to 30 inches
Texture: Clayey, gravelly clay
Structure: Prismatic
Consistence: Very hard, very firm
Reactivity: Moderately alkaline

Depth: 30 to 60 inches
Texture: Stratified gravelly loam to very gravelly loamy sand
Structure: Massive
Consistence: Hard, firm
Reactivity: Moderately alkaline

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.0 to 7.5 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Aridic Argixerolls, clayey, montmorillonitic, frigid, shallow
Positions on landscape: Crests of mountains
Distinctive present vegetation: Singleleaf pinyon, Utah juniper, mountain big sagebrush

Inclusion 2
Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Convex, north-facing crests of mountains
Distinctive present vegetation: Needlegrass, low sagebrush

Inclusion 3
Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave, north-facing side slopes of mountains in areas where snow accumulates
Distinctive present vegetation: Bluebunch wheatgrass, serviceberry, mountain big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Itca Variant Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Reluctan Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Handy Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Itca Variant Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfills: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Reluctan Soil
Range seeding: Poor—small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—small stones, slope
Daily cover for landfills: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Handy Soil
Range seeding: Poor—rooting depth
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfills: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Itca Variant, Reluctan, and Handy soils—Vlls, nonirrigated
Range site: Itca Variant soil—025X062N; Reluctan
2730—Pula-Spike-Buffaran association

**Positions on landscape:** Deeply dissected fan piedmonts

**Composition**

**Major components:**
- Pula very gravelly sandy loam, 15 to 30 percent slopes—40 percent
- Spike very gravelly sandy loam, 30 to 50 percent slopes—30 percent
- Buffaran gravelly loam, 4 to 8 percent slopes—15 percent

**Contrasting inclusions:**
- Durixerollic Haplargids, clayey-skeletal, montmorillonitic, mesic, 15 to 50 percent slopes—8 percent
- Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—4 percent
- Durixerollic Haplargids, fine-loamy, mixed, mesic, 8 to 15 percent slopes—3 percent

**Characteristics of the Pula Soil**

**Classification:** Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

**Positions on landscape:** North-facing side slopes of fan piedmont remnants

**Parent material:** Mixed alluvium

**Slope:** 15 to 30 percent

**Elevation:** 5,200 to 6,000 feet

**Average annual precipitation:** About 10 inches

**Average annual air temperature:** About 48 degrees F

**Frost-free season:** About 110 days

**Dominant present vegetation:** Bluegrass, bottlebrush squirreltail, Wyoming big sagebrush

**Typical Profile**

**Rock fragments on surface:** 10 percent cobbles, 45 percent pebbles

**Depth:** 0 to 2 inches

**Texture:** Very gravelly sandy loam

**Structure:** Platy

**Consistence:** Soft, very friable

**Reaction:** Mildly alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Sodicity (SAR):** 0 to 2

**Depth:** 2 to 24 inches

**Texture:** Very gravelly clay loam, extremely gravelly clay

**Structure:** Subangular blocky

**Consistence:** Very hard, firm

**Reaction:** Mildly alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Sodicity (SAR):** 0 to 2

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Slow

**Available water capacity:** 3 to 5 inches

**Water-supplying capacity:** 9 inches

**Runoff:** Rapid

**Hydrologic group:** C

**Erosion factors (upper layer):** K value—0.10; T value—5; wind erodibility group—5

**Hazard of erosion:** By water—slight; by wind—slight

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—moderate; to concrete—low

**Potential for frost action:** Low

**Characteristics of the Spike Soil**

**Classification:** Typic Haplargids, loamy-skeletal, mixed, mesic

**Positions on landscape:** South-facing side slopes of fan piedmont remnants

**Parent material:** Mixed alluvium

**Slope:** 30 to 50 percent

**Elevation:** 5,200 to 6,000 feet

**Average annual precipitation:** About 10 inches

**Average annual air temperature:** About 49 degrees F

**Frost-free season:** About 110 days

**Dominant present vegetation:** Bluegrass, galleta, shadscale, Wyoming big sagebrush

**Typical Profile**

**Rock fragments on surface:** 5 percent cobbles, 70 percent pebbles

**Depth:** 0 to 2 inches

**Texture:** Very gravelly sandy loam

**Structure:** Platy

**Consistence:** Slightly hard, friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Sodicity (SAR):** 0 to 5

**Depth:** 2 to 6 inches

**Texture:** Very gravelly clay, very gravelly clay loam

**Structure:** Angular blocky

**Consistence:** Very hard, firm

**Reaction:** Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter  
Sodicity (SAR): 13 to 25  
Depth: 6 to 60 inches  
Texture: Extremely gravelly clay loam, very gravelly loam  
Structure: Massive  
Consistence: Hard, friable  
Reaction: Moderately alkaline

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Moderately slow  
Available water capacity: 2.7 to 5.0 inches  
Water-supplying capacity: 7 inches  
Runoff: Rapid  
Hydrologic group: B  
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—5  
Hazard of erosion: By water—severe; by wind—slight  
Shrink-swell potential: Moderate  
Corrosivity: To steel—high; to concrete—moderate  
Potential for frost action: Low

Characteristics of the Buffaran Soil

Classification: Xerollic Durargids, clayey, montmorillonitic, mesic, shallow  
Positions on landscape: Summits of fan piedmont remnants  
Parent material: Mixed alluvium  
Slope: 4 to 8 percent  
Elevation: 5,200 to 6,000 feet  
Average annual precipitation: About 10 inches  
Average annual air temperature: About 49 degrees F  
Frost-free season: About 110 days  
Dominant present vegetation: Thurber needlegrass, bottlebrush squirreltail, Indian ricegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 15 percent pebbles  
Depth: 0 to 5 inches  
Texture: Gravelly loam  
Structure: Platy  
Consistence: Slightly hard, very friable  
Reaction: Mildly alkaline  
Salinity: 0 to 2 millimhos per centimeter  
Sodicity (SAR): 0 to 2  
Depth: 5 to 16 inches  
Texture: Clay, gravelly clay, gravelly clay loam  
Structure: Prismatic  
Consistence: Hard, firm  
Reaction: Mildly alkaline  
Salinity: 0 to 2 millimhos per centimeter  
Sodicity (SAR): 0 to 2  
Depth: 16 to 27 inches  
Material: Indurated hardpan  
Structure: Massive  
Consistence: Extremely hard, extremely firm  
Depth: 27 to 60 inches  
Material: Cemented hardpan  
Structure: Platy  
Consistence: Very hard, very firm

Soil and Water Features

Depth to the hardpan: 14 to 20 inches  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Slow  
Available water capacity: 1.9 to 2.4 inches  
Water-supplying capacity: 8 inches  
Runoff: Medium  
Hydrologic group: D

Erosion factors (upper layer): K value—0.32; T value—1; wind erodibility group—6  
Hazard of erosion: By water—slight; by wind—slight  
Shrink-swell potential: High  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Haplargids, clayey-skeletal, montmorillonitic, mesic  
Positions on landscape: The lowest parts of north-facing side slopes of fan piedmont remnants  
Distinctive present vegetation: Black sagebrush, bottlebrush squirreltail

Inclusion 2
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, mesic  
Positions on landscape: Inset fans  
Distinctive present vegetation: Bluegrass, basin wildrye, basin big sagebrush

Inclusion 3
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic  
Positions on landscape: Toe slopes of fan piedmont remnants  
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses

Livestock grazing, wildlife habitat
**Suitability for Wildlife Habitat Elements**

**Pula Soil**
- Wild herbaceous plants (nonirrigated): Fair
- Shrubs (nonirrigated): Fair

**Spike Soil**
- Wild herbaceous plants (nonirrigated): Very poor
- Shrubs (nonirrigated): Very poor

**Buffaran Soil**
- Wild herbaceous plants (nonirrigated): Fair
- Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Pula Soil**
- Range seeding: Poor—small stones
- Roadfill: Fair—large stones, slope
- Topsoil: Poor—small stones, area reclaim, slope
- Daily cover for landfill: Poor—seepage, small stones, slope
- Shallow excavations: Severe—slope
- Local roads and streets: Severe—slope
- Pond reservoir areas: Severe—slope
- Embankments, dikes, and levees: Severe—seepage
- Sand: Probable source
- Gravel: Probable source

**Spike Soil**
- Range seeding: Poor—too arid, small stones, erodes easily
- Roadfill: Poor—slope
- Topsoil: Poor—small stones, area reclaim, slope
- Daily cover for landfill: Poor—small stones, slope
- Shallow excavations: Severe—slope
- Local roads and streets: Severe—slope
- Pond reservoir areas: Severe—slope
- Embankments, dikes, and levees: Moderate—large stones
- Sand: Improbable source—excess fines
- Gravel: Improbable source—excess fines

**Buffaran Soil**
- Range seeding: Poor—droughty, rooting depth
- Roadfill: Poor—cemented pan, shrink-swell, low strength
- Topsoil: Poor—cemented pan, too clayey, small stones
- Daily cover for landfill: Poor—cemented pan, hard to pack
- Shallow excavations: Severe—cemented pan
- Local roads and streets: Severe—cemented pan, shrink-swell, low strength
- Pond reservoir areas: Severe—cemented pan
- Embankments, dikes, and levees: Severe—thin layer
- Sand: Improbable source—excess fines
- Gravel: Improbable source—excess fines

**Interpretive Groups**

- **Land capability classification:** Pula, Spike, Buffaran soils—VIIa, nonirrigated
- **Range site:** Pula and Buffaran soils—028B010N; Spike soil—024X045N; Inclusion 1—024X030N; Inclusion 2—028B003N; Inclusion 3—028B016N

**2731—Pula-Spike association**

- **Positions on landscape:** Deeply dissected fan piedmonts

**Composition**

- **Major components:**
  - Pula very cobbly loam, 30 to 50 percent slopes—50 percent
  - Spike very gravelly sandy loam, 30 to 50 percent slopes—35 percent

- **Contrasting inclusions:**
  - Duric Natrargids, fine, montmorillonitic, mesic, 2 to 8 percent slopes—6 percent
  - Xeric Torriorthents, loamy, mixed (calcareous), mesic, 15 to 50 percent slopes—4 percent
  - Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—3 percent
  - Durixerollic Haplargids, fine-loamy, mixed, mesic, 4 to 15 percent slopes—2 percent

**Characteristics of the Pula Soil**

- **Classification:** Xerolic Haplargids, clayey-skeletal, montmorillonitic, mesic
- **Positions on landscape:** North-facing side slopes of fan piedmont remnants
- **Parent material:** Mixed alluvium
- **Slope:** 30 to 50 percent
- **Elevation:** 5,300 to 5,700 feet
- **Average annual precipitation:** About 10 inches
- **Average annual air temperature:** About 48 degrees F
- **Frost-free season:** About 110 days
- **Dominant present vegetation:** Bluegrass, bottlebrush, squirreltail, Wyoming big sagebrush

**Typical Profile**

- **Rock fragments on surface:** 30 percent cobbles, 45 percent pebbles
- **Depth:** 0 to 2 inches
- **Texture:** Very cobbly loam
- **Structure:** Platy
- **Consistence:** Soft, very friable
- **Reaction:** Mildly alkaline
- **Salinity:** 0 to 2 millimhos per centimeter
- **Sodicity (SAR):** 0 to 2
- **Depth:** 2 to 24 inches
Texture: Very gravelly clay loam, extremely gravelly clay
Structure: Subangular blocky
Consistency: Very hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 24 to 60 inches
Texture: Extremely gravelly sandy loam
Structure: Massive
Consistency: Hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 3 to 5 inches
Water-supplying capacity: 9 inches
Runoff: Rapid

Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Spike Soil

Classification: Typic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: South-facing side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 30 to 50 percent
Elevation: 5,200 to 5,700 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, galleta, shadscale, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 5 percent cobbles, 70 percent pebbles
Depth: 0 to 2 inches
Texture: Very gravelly sandy loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 2 to 6 inches
Texture: Very gravelly clay, very gravelly clay loam
Structure: Angular blocky
Consistency: Very hard, firm
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 6 to 60 inches
Texture: Extremely gravelly clay loam, very gravelly loam
Structure: Massive
Consistency: Hard, friable
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.7 to 5.0 inches
Water-supplying capacity: 7 inches
Runoff: Rapid

Hydrologic group: B
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Duric Natrargids, fine, montmorillonitic, mesic
Positions on landscape: The lower summits of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Classification: Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, shallow
Positions on landscape: Eroded side slopes of hills along edges of fan piedmont remnants
Distinctive present vegetation: Shadscale, Wyoming big sagebrush, galleta

Inclusion 3
Classification: Durixerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Needlegrass, Indian ricegrass, Wyoming big sagebrush
Inclusion 4
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: The upper summits of fan piedmont remnants
Distinctive present vegetation: Needlegrass, Wyoming big sagebrush, spiny hopsage

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Pula Soil
Wild herbaceous plants (nonirrigated): Fair
 Shrubs (nonirrigated): Fair

Spike Soil
Wild herbaceous plants (nonirrigated): Very poor
 Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Pula Soil
Range seeding: Poor—large stones
 Roadfill: Poor—large stones, slope
 Topsoil: Poor—small stones, area reclaim, slope
 Daily cover for landfill: Poor—seepage, small stones, slope
 Shallow excavations: Severe—slope
 Local roads and streets: Severe—slope
 Pond reservoir areas: Severe—seepage, slope
 Embankments, dikes, and levees: Severe—seepage
 Sand: Probable source
 Gravel: Probable source

Spike Soil
Range seeding: Poor—too arid, small stones, erodes easily
 Roadfill: Poor—slope
 Topsoil: Poor—small stones, area reclaim, slope
 Daily cover for landfill: Poor—small stones, slope
 Shallow excavations: Severe—slope
 Local roads and streets: Severe—slope
 Pond reservoir areas: Severe—slope
 Embankments, dikes, and levees: Moderate—large stones
 Sand: Improbable source—excess fines
 Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Pula and Spike soils—VII, nonirrigated
Range site: Pula soil—028B010N; Spike soil—024X045N; Inclusion 1—024X002N; Inclusion 2—024X045N; Inclusion 3—028B010N; Inclusion 4—024X020N

2740—Spike-Desatoya Variant-Grassval association

Positions on landscape: Deeply dissected fan piedmonts

Composition

Major components:
Spike very gravelly sandy loam, 30 to 50 percent slopes—35 percent
Desatoya Variant very gravelly sandy loam, 15 to 50 percent slopes—35 percent
Grassval gravelly loam, 4 to 8 percent slopes—15 percent

Contrasting inclusions:
Xerolic Durargids, fine, montmorillonitic, mesic, shallow, 4 to 8 percent slopes—8 percent
Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic, 4 to 15 percent slopes—7 percent

Characteristics of the Spike Soil
Classification: Typic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: South-facing side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 30 to 50 percent
Elevation: 5,400 to 5,900 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, galleta, shadzcale, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 5 percent cobbles, 70 percent pebbles
Depth: 0 to 2 inches
Texture: Very gravelly sandy loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 2 to 6 inches
Texture: Very gravelly clay, very gravelly clay loam
Structure: Angular blocky
Consistence: Very hard, firm
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 6 to 60 inches
Texture: Extremely gravelly clay loam, very gravelly loam
**Structure:** Massive  
**Consistency:** Hard, friable  
**Reaction:** Moderately alkaline  
**Salinity:** 2 to 8 millimhos per centimeter  
**Sodicity (SAR):** 13 to 25  

**Soil and Water Features**  
**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Moderately slow  
**Available water capacity:** 2.7 to 5.0 inches  
**Water-supplying capacity:** 7 inches  
**Runoff:** Rapid  
**Hydrologic group:** B  
**Erosion factors (upper layer):** K value—0.02; T value—5; wind erodibility group—5  
**Hazard of erosion:** By water—severe; by wind—slight  
**Shrink-swell potential:** Moderate  
**Corrosivity:** To steel—high; to concrete—moderate  
**Potential for frost action:** Low  

**Characteristics of the Desatoya Variant Soil**  
**Classification:** Xerolic Haplargids, fine-loamy, mixed, mesic  
**Positions on landscape:** North-facing side slopes of fan piedmont remnants  
**Parent material:** Mixed alluvium  
**Slope:** 15 to 50 percent  
**Elevation:** 5,400 to 5,900 feet  
**Average annual precipitation:** About 9 inches  
**Average annual air temperature:** About 49 degrees F  
**Frost-free season:** About 110 days  
**Dominant present vegetation:** Bottlebrush squirreltail, bluegrass, Indian ricegrass, black sagebrush  

**Typical Profile**  
**Rock fragments on surface:** 5 percent cobbles, 45 percent pebbles  
**Depth:** 0 to 3 inches  
**Texture:** Very gravelly sandy loam  
**Structure:** Platy  
**Consistency:** Slightly hard, very friable  
**Reaction:** Moderately alkaline  
**Salinity:** 0 to 2 millimhos per centimeter  
**Sodicity (SAR):** 0 to 2  

**Depth:** 3 to 13 inches  
**Texture:** Gravelly clay loam  
**Structure:** Subangular blocky  
**Consistency:** Slightly hard, friable  
**Reaction:** Moderately alkaline  
**Salinity:** 0 to 2 millimhos per centimeter  
**Sodicity (SAR):** 0 to 2  

**Depth:** 13 to 26 inches  
**Texture:** Very gravelly sandy loam  
**Structure:** Massive  
**Consistency:** Hard, friable  
**Reaction:** Strongly alkaline  
**Salinity:** 4 to 8 millimhos per centimeter  
**Sodicity (SAR):** 0 to 5  

**Depth:** 26 to 60 inches  
**Texture:** Very gravelly sand  
**Structure:** Single grain  
**Consistency:** Loose  
**Reaction:** Strongly alkaline  
**Salinity:** 4 to 8 millimhos per centimeter  
**Sodicity (SAR):** 0 to 5  

**Soil and Water Features**  
**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Moderate over rapid  
**Available water capacity:** 2.8 to 4.4 inches  
**Water-supplying capacity:** 8 inches  
**Runoff:** Rapid  
**Hydrologic group:** B  
**Erosion factors (upper layer):** K value—0.10; T value—5; wind erodibility group—5  
**Hazard of erosion:** By water—slight; by wind—slight  
**Shrink-swell potential:** Moderate  
**Corrosivity:** To steel—high; to concrete—low  
**Potential for frost action:** Low  

**Characteristics of the Grassval Soil**  
**Classification:** Xerolic Durargids, loamy, mixed, mesic, shallow  
**Positions on landscape:** Summits of fan piedmont remnants  
**Parent material:** Mixed alluvium  
**Slope:** 4 to 8 percent  
**Elevation:** 5,400 to 5,900 feet  
**Average annual precipitation:** About 9 inches  
**Average annual air temperature:** About 46 degrees F  
**Frost-free season:** About 100 days  
**Dominant present vegetation:** Indian ricegrass, bottlebrush squirreltail, black sagebrush  

**Typical Profile**  
**Rock fragments on surface:** 10 percent pebbles  
**Depth:** 0 to 4 inches  
**Texture:** Gravelly loam  
**Structure:** Platy  
**Consistency:** Slightly hard, very friable  
**Reaction:** Moderately alkaline  
**Salinity:** 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 4 to 13 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistence: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 13 inches
Material: Indurated hardpan

Soil and Water Features
Depth to the hardpan: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Xerollic Durargids, fine, montmorillonitic, mesic, shallow
Positions on landscape: Slightly concave summits of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, bluegrass

Inclusion 2
Classification: Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Bluegrass, spiny hopsage, Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Spike Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Desatoya Variant Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Grassval Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Spike Soil
Range seeding: Poor—too arid, small stones, erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Desatoya Variant Soil
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Grassval Soil
Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Spike, Desatoya Variant, and Grassval soils—VII, nonirrigated
Range site: Spike soil—024X045N; Desatoya Variant and Grassval soils—024X030N; Inclusion 1—028B010N; Inclusion 2—024X020N

2771—Kram-Hopeka-Rock outcrop association
Positions on landscape: Mountains
Lander County, Nevada, South Part

Composition

Major components:
Kram very gravelly very fine sandy loam, 30 to 50 percent slopes—35 percent
Hopeka very gravelly loam, 30 to 50 percent slopes—35 percent
Rock outcrop—15 percent
Contrasting inclusions:
Aridic Calcixerolls, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—8 percent
Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 15 to 30 percent slopes—4 percent
Dororthidic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic, 15 to 30 percent slopes—3 percent

Characteristics of the Kram Soil

Classification: Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, frigid
Positions on landscape: The lower side slopes of mountains
Parent material: Residueum derived from limestone and dolostone
Slope: 30 to 50 percent
Elevation: 5,400 to 7,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 95 days
Dominant present vegetation: Bluegrass, black sagebrush, singleleaf pinyon, Utah juniper
Site index for common trees: Singleleaf pinyon—45;
Utah juniper—45

Typical Profile

Rock fragments on surface: 65 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly very fine sandy loam
Structure: Granular
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline

Depth: 3 to 10 inches
Texture: Very gravelly loam, very gravelly very fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline

Depth: 10 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.0 to 1.3 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1;
wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Hopeka Soil

Classification: Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, frigid
Positions on landscape: The upper side slopes of mountains
Parent material: Residueum derived from limestone and dolostone
Slope: 30 to 50 percent
Elevation: 6,500 to 7,800 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Bluegrass, black sagebrush, singleleaf pinyon, Utah juniper
Site index for common trees: Singleleaf pinyon—33;
Utah juniper—33

Typical Profile

Rock fragments on surface: 25 percent cobbles, 20 percent pebbles
Depth: 0 to 8 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Moderately alkaline

Depth: 8 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 4 to 10 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.4 to 0.7 inch
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1;
wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop
Positions on landscape: Scattered peaks, exposed bedding planes
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Classification: Aridic Calcixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: North-facing side slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, mountain big sagebrush, currant

Inclusion 2
Classification: Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Convex, lower side slopes of mountains
Distinctive present vegetation: Bluegrass, black sagebrush

Inclusion 3
Classification: Durorthidic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Basin wildrye, bluegrass, basin big sagebrush

Major Uses
Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Cordwood production

Suitability for Wildlife Habitat Elements

Kram Soil
Wild herbaceous plants (nonirrigated): Poor
Coniferous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Hopeka Soil
Wild herbaceous plants (nonirrigated): Poor
Coniferous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Kram Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Hopeka Soil
Range seeding: Poor—droughty, depth to rock, small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Kram and Hopeka soils—VIIa, nonirrigated; Rock outcrop—VIIa, nonirrigated
Range site: Kram and Hopeka soils—025X063N; Rock outcrop—none; Inclusion 1—024X021N; Inclusion 2—024X030N; Inclusion 3—025X003N

2780—Desatoya-Tenabo-Pineal association
Positions on landscape: Fan piedmonts

Composition

Major components:
Desatoya gravelly fine sandy loam, 2 to 4 percent slopes—45 percent
Tenabo very gravelly fine sandy loam, 4 to 8 percent slopes—25 percent
Pineal gravelly loam, 4 to 8 percent slopes—15 percent

Contrasting inclusions:
Durixerolic Haplargids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—7 percent
Durixerolic Haplargids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—6 percent
Xerolic Durargids, clayey, mottmorillonitic, mesic, shallow, 2 to 4 percent slopes—2 percent

Characteristics of the Desatoya Soil
Classification: Durixerolic Haplargids, clayey over loamy-skeletal, mottmorillonitic, mesic
Positions on landscape: Slightly dissected fan aprons
Parent material: Mixed alluvium
Slope: 2 to 4 percent
Elevation: 6,000 to 6,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, needlegrass, Indian ricegrass, black sagebrush
Typical Profile

Rock fragments on surface: 25 percent pebbles

Depth: 0 to 6 inches
Texture: Gravely fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 13 inches
Texture: Gravely clay, gravelly clay loam
Structure: Prismatic
Consistency: Hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 13 to 60 inches
Texture: Stratified extremely gravelly sandy loam, very gravelly loamy sand
Structure: Massive
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.0 to 5.3 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C

Erosion factors (upper layer): K value—0.20; T value—5;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Tenabo Soil

Classification: Typic Nadurargids, loamy, mixed, mesic, shallow
Positions on landscape: Nonburied summits of fan piedmont remnants
Parent material: Thin loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 4 to 8 percent
Elevation: 6,000 to 6,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile

Rock fragments on surface: 30 percent pebbles

Depth: 0 to 5 inches
Texture: Very gravely fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 5 to 17 inches
Texture: Clay loam, gravely clay loam, silty clay loam
Structure: Prismatic
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 13 to 25

Depth: 17 to 31 inches
Material: Indurated hardpan
Structure: Platy
Consistency: Extremely hard, extremely firm

Depth: 31 to 60 inches
Texture: Stratified very gravely sandy loam to extremely gravelly coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features

Depth to the hardpan: 9 to 20 inches
Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.2 to 2.4 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D

Erosion factors (upper layer): K value—0.15; T value—1;
wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Pineval Soil

Classification: Durixerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants, fan drainageways
Parent material: Mixed alluvium
Slope: 4 to 8 percent
Elevation: 6,000 to 6,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 10 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand
Structure: Single grain
Consistency: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.2 to 4.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic

Positions on landscape: East-facing shoulder slopes and scarp of fan piedmonts
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Bluegrass, black sagebrush

Inclusion 3
Classification: Xerollic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: The highest summits of nonburied fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Desatoya Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Tenabo Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Pineal Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Desatoya Soil
Range seeding: Poor—rooting depth
Roadfill: Fair—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—large stones
Local roads and streets: Moderate—frost action, large stones
Pond reservoir areas: Moderate—slope, seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Tenabo Soil
Range seeding: Poor—too arid, droughty, excess sodium
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones, too sandy
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess sodium, excess salt
Sand: Probable source
Gravel: Probable source

Pineval Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups

Land capability classification: Desatoya soil—VII, nonirrigated; Tenabo soil—Ive, irrigated, and VII, nonirrigated; Pineal soil—Ive, irrigated, and VII, nonirrigated
Range site: Desatoya soil—027X032N; Tenabo soil—028B017N; Pineal soil—028B010N; Inclusion 1—028B010N; Inclusion 2—028B011N; Inclusion 3—028B010N

2781—Desatoya-Orovada association

Positions on landscape: Fan piedmonts

Composition

Major components:
Desatoya gravelly fine sandy loam, 4 to 8 percent slopes—60 percent
Orovada gravelly fine sandy loam, 4 to 8 percent slopes—25 percent
Contrasting inclusions:
Durixerollic Haplargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—7 percent
Dural Natargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—5 percent
Durixerollic Haplargids, fine, montmorillonitic, mesic, 4 to 15 percent slopes—3 percent

Characteristics of the Desatoya Soil

Classification: Durixerollic Haplargids, clayey over loamy-skeletal, montmorillonitic, mesic
Positions on landscape: Summits of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 8 percent

Elevation: 6,000 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, needlegrass, Indian ricegrass, black sagebrush

Typical Profile

Depth: 0 to 6 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 13 inches
Texture: Gravelly clay, gravelly clay loam
Structure: Prismatic
Consistence: Hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 13 to 60 inches
Texture: Stratified extremely gravelly sandy loam to very gravelly loamy sand
Structure: Massive
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches.
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.0 to 5.3 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Orovada Soil

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 4 to 8 percent
Elevation: 6,000 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Gravelly fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.2 to 9.0 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Inclusion 2
Classification: Duric Natrargids, fine-loamy, mixed, mesic
Positions on landscape: The lower summits of fan piedmont remnants
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Inclusion 3
Classification: Durixerollic Haplargids, fine, montmorillonitic, mesic
Positions on landscape: The upper summits of fan piedmont remnants
Distinctive present vegetation: Bluegrass, Indian ricegrass, black sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Desatoya Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Desatoya Soil
Range seeding: Poor—rooting depth
Roadfill: Fair—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—large stones
Local roads and streets: Moderate—frost action, large stones
Pond reservoir areas: Moderate—slope, seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Desatoya soil—VIIs,
nonirrigated; Orovada soil—Ille, irrigated, and Vlc, nonirrigated

Range site: Desatoya soil—027X032N; Orovada soil—
028B010N; Inclusion 1—028B010N; Inclusion 2—
028B017N; Inclusion 3—027X032N

2782—Desatoya-Pineal-Grassval
association

Positions on landscape: Piedmont slopes

Composition

Major components:
Desatoya very gravelly loam, 8 to 15 percent slopes—
35 percent
Pineal gravelly loam, 2 to 8 percent slopes—35
percent
Grassval gravelly loam, 2 to 8 percent slopes—15
percent
Contrasting inclusions:
Durixerolic Haplargids, loamy-skeletal, mixed, mesic, 8
to 15 percent slopes—7 percent
Durixerolic Camborthids, loamy-skeletal, mixed, mesic,
2 to 8 percent slopes—4 percent
Durixerolic Haplargids, fine-loamy, mixed, mesic, 4 to 8
percent slopes—4 percent

Characteristics of the Desatoya Soil

Classification: Durixerolic Haplargids, clayey over
loamy-skeletal, montmorillonitic, mesic
Positions on landscape: Convex side slopes of fan
piedmont remnants
Parent material: Mixed alluvium
Slope: 8 to 15 percent
Elevation: 6,300 to 6,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Bluegrass, needlegrass,
Indian ricegrass, black sagebrush

Typical Profile

Rock fragments on surface: 5 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly loam
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 3 to 14 inches
Texture: Gravelly clay, gravelly clay loam
Structure: Prismatic

Consistence: Hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 14 to 60 inches
Texture: Stratified extremely gravelly sandy loam to very
gravelly loamy sand
Structure: Massive
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features

Depth to a seasonal high water table: More than 60
inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.0 to 5.4 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—5;
wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Pineal Soil

Classification: Durixerolic Haplargids, loamy-skeletal,
mixed, mesic
Positions on landscape: Fan skirts
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 6,300 to 6,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass,
bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.2 to 4.4 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Grassval Soil

Classification: Xerolic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: The highest summits of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 6,300 to 6,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, black sagebrush

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 4 to 13 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistence: Hard, friable
Reaction: Moderately alkaline

Salinity: 0 to 2 millimhos per centimeter

Depth: 13 inches
Material: Indurated hardpan

Soil and Water Features

Depth to the hardpan: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: The higher side slopes of fan piedmont remnants
Distinctive present vegetation: Black sagebrush, bluegrass, rabbitbrush

Inclusion 2
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: The lower summits of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Desatoya Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Pineal Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Grassval Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Desatoya Soil
Range seeding: Poor—rooting depth, small stones
Roadfill: Fair—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—large stones, slope
Local roads and streets: Moderate—slope, frost action, large stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Pineval Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Grassval Soil
Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Desatoya and Grassval soils—Vls, nonirrigated; Pineval soil—IVe, irrigated, and Vls, nonirrigated
Range site: Desatoya soil—024X030N; Pineval soil—028B010N; Grassval soil—028B011N; Inclusion 1—024X030N; Inclusions 2 and 3—028B010N

Composition
Major components:
Desatoya very gravelly sandy loam, 30 to 50 percent slopes—35 percent
Spike very gravelly sandy loam, 30 to 50 percent slopes—35 percent
Desatoya gravelly sandy loam, 8 to 15 percent slopes—15 percent

Contrasting inclusions:
Xerolic Haplargids, clayey-skeletal, montmorillonitic, mesic, 15 to 50 percent slopes—8 percent
Durixerolic Camborthids, coarse-loamy, mixed, mesic, 4 to 8 percent slopes—4 percent

Durixerolic Haplargids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—3 percent

Characteristics of the Desatoya Soil, Steep
Classification: Durixerolic Haplargids, clayey over loamy-skeletal, montmorillonitic, mesic
Positions on landscape: Convex, north- and east-facing side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 30 to 50 percent
Elevation: 5,200 to 6,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, needlegrass, Indian ricegrass, black sagebrush

Typical Profile
Rock fragments on surface: 45 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 3 to 14 inches
Texture: Gravelly clay, gravelly clay loam
Structure: Prismatic
Consistence: Hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 14 to 60 inches
Texture: Stratified extremely gravelly sandy loam to very gravelly loamy sand
Structure: Massive
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter

2783—Desatoya-Spike association
Positions on landscape: Strongly dissected fan piedmonts
Sodicity (SAR): 2 to 10

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Slow

*Available water capacity:* 4.0 to 5.4 inches

*Water-supplying capacity:* 8 inches

*Runoff:* Medium

*Hydrologic group:* C

*Erosion factors (upper layer):*
  - K value—0.10; T value—5;
  - wind erodibility group—5

*Hazard of erosion:* By water—slight; by wind—slight

*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Spike Soil**

*Classification:* Typic Haplargsids, loamy-skeletal, mixed, mesic

*Positions on landscape:* South- and west-facing side slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 30 to 50 percent

*Elevation:* 5,200 to 6,000 feet

*Average annual precipitation:* About 8 inches

*Average annual air temperature:* About 49 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, galleta, shadscale, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 5 percent cobbles, 70 percent pebbles

*Depth:* 0 to 2 inches

*Texture:* Very gravelly sandy loam

*Structure:* Platy

*Consistency:* Slightly hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 2 to 6 inches

*Texture:* Very gravelly clay, very gravelly clay loam

*Structure:* Angular blocky

*Consistency:* Very hard, firm

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

*Depth:* 6 to 60 inches

*Texture:* Extremely gravelly clay loam, very gravelly loam

*Structure:* Massive

*Consistency:* Hard, friable

*Reaction:* Moderately alkaline

*Salinity:* 2 to 8 millimhos per centimeter

*Sodicity (SAR):* 13 to 25

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 2.7 to 5.0 inches

*Water-supplying capacity:* 7 inches

*Runoff:* Rapid

*Hydrologic group:* B

*Erosion factors (upper layer):*
  - K value—0.20; T value—5;
  - wind erodibility group—5

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Moderate

*Corrosivity:* To steel—high; to concrete—moderate

*Potential for frost action:* Low

**Characteristics of the Desatoya Soil, Strongly Sloping**

*Classification:* Durixerolic Haplargsids, clayey over loamy-skeletal, montmorillonitic, mesic

*Positions on landscape:* Convex crests and shoulder slopes of fan piedmont remnants

*Parent material:* Mixed alluvium

*Slope:* 8 to 15 percent

*Elevation:* 5,300 to 6,000 feet

*Average annual precipitation:* About 10 inches

*Average annual air temperature:* About 48 degrees F

*Frost-free season:* About 110 days

*Dominant present vegetation:* Bluegrass, needlegrass, Indian ricegrass, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 25 percent pebbles

*Depth:* 0 to 3 inches

*Texture:* Gravelly sandy loam

*Structure:* Platy

*Consistency:* Slightly hard, very friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 3 to 14 inches

*Texture:* Gravelly clay, gravelly clay loam

*Structure:* Prismatic

*Consistency:* Hard, friable

*Reaction:* Mildly alkaline

*Salinity:* 0 to 2 millimhos per centimeter

*Sodicity (SAR):* 0 to 2

*Depth:* 14 to 60 inches

*Texture:* Stratified extremely gravelly sandy loam to very gravelly loamy sand
Structure: Massive
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 10

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.0 to 5.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Xerolic Haplargids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Slightly concave side slopes of fan piedmont remnants
Distinctive present vegetation: Small rabbitbrush, bluegrass, Wyoming big sagebrush

Inclusion 2
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Basin big sagebrush

Inclusion 3
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: The lower, concave side slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, small rabbitbrush, bottlebrush squirreltail

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Desatoya Soil, Steep
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Spike Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Desatoya Soil, Strongly Sloping
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Desatoya Soil, Steep
Range seeding: Poor—rooting depth, small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Spice Soil
Range seeding: Poor—small stones, erodes easily, excess salt
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Desatoya Soil, Strongly Sloping
Range seeding: Poor—rooting depth
Roadfill: Fair—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—large stones, slope
Local roads and streets: Moderate—slope, frost action, large stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Desatoya and Spike soils—VIIa, nonirrigated
Range site: Desatoya soils—024X030N; Spike soil—024X045N; Inclusion 1—028B010N; Inclusion 2—028B003N; Inclusion 3—028B010N

2791—Old Camp-Colbar-Rock outcrop association
Positions on landscape: Mountains
Composition

Major components:
Old Camp very cobbly loam, 4 to 15 percent slopes—40 percent
Colbar very cobbly loam, 15 to 30 percent slopes—30 percent
Rock outcrop—15 percent

Contrasting inclusions:
Xerollic Durargids, clayey, montmorillonitic, mesic, shallow, 15 to 30 percent slopes—7 percent
McVegas very gravelly loam, 4 to 15 percent slopes—5 percent
Haploxerollic Durargids, fine, montmorillonitic, mesic, 4 to 15 percent slopes—3 percent

Characteristics of the Old Camp Soil

Classification: Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Convex crests and shoulder slopes of mountains
Parent material: Residueum derived from basalt and andesite
Slope: 4 to 15 percent
Elevation: 5,400 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Thurber needlegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 2 inches
Texture: Very cobbly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline

Depth: 2 to 11 inches
Texture: Very gravelly loam, very cobbly clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline

Depth: 11 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.9 to 1.2 inches
Water-supplying capacity: 8 inches

Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Colbar Soil

Classification: Xerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Concave, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolite and andesite
Slope: 15 to 30 percent
Elevation: 5,400 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Needlegrass, bluegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 30 percent cobbles, 10 percent pebbles
Depth: 0 to 3 inches
Texture: Very cobbly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline

Depth: 3 to 22 inches
Texture: Cobbly loam, gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline

Depth: 22 to 26 inches
Texture: Gravelly loam, cobbly loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline

Depth: 26 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—2;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Rock Outcrop**

*Positions on landscape: Escarpments and severely eroded side slopes of mountains*

**Contrasting Inclusions**

**Inclusion 1**
*Classification: Xerollic Durargids, clayey, montmorillonitic, mesic, shallow*
*Positions on landscape: Convex, south-facing side slopes of mountains*
*Distinctive present vegetation: Bluebunch wheatgrass, big sagebrush*

**Inclusion 2**
*Classification: Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow*
*Positions on landscape: Convex, broad crests and saddles of mountains*
*Distinctive present vegetation: Shadscale, small rabbitbrush, bud sagebrush*

**Inclusion 3**
*Classification: Haploxerollic Durargids, fine, montmorillonitic, mesic*
*Positions on landscape: Convex crests and shoulder slopes of mountains*
*Distinctive present vegetation: Spiny hopsage, Wyoming big sagebrush*

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Old Camp Soil**
*Wild herbaceous plants (nonirrigated): Fair*
*Shrubs (nonirrigated): Fair*

**Colbar Soil**
*Wild herbaceous plants (nonirrigated): Fair*
*Shrubs (nonirrigated): Fair*

**Suitability and Limitations for Selected Uses**

**Old Camp Soil**
*Range seeding: Poor—large stones, droughty*
*Roadfill: Poor—depth to rock, large stones*
*Topsoil: Poor—depth to rock, small stones*
*Daily cover for landfill: Poor—depth to rock, small stones*

*Shallow excavations: Severe—depth to rock, large stones*
*Local roads and streets: Severe—depth to rock, large stones*
*Pond reservoir areas: Severe—depth to rock, large stones*
*Embankments, dikes, and levees: Severe—large stones*
*Sand: Im probable source—excess fines*
*Gravel: Im probable source—excess fines*

**Colbar Soil**
*Range seeding: Poor—large stones*
*Roadfill: Poor—depth to rock*
*Topsoil: Poor—large stones, slope*
*Daily cover for landfill: Poor—depth to rock, large stones, slope*

*Shallow excavations: Severe—depth to rock, slope*
*Local roads and streets: Severe—slope*
*Pond reservoir areas: Severe—seepage, slope*
*Embankments, dikes, and levees: Severe—large stones*
*Sand: Im probable source—excess fines*
*Gravel: Im probable source—excess fines*

**Interpretive Groups**

*Land capability classification: Old Camp and Colbar soils—VIIIs, nonirrigated; Rock outcrop—VIIIs, nonirrigated*
*Range site: Old Camp and Colbar soils—024x005N; Rock outcrop—none; Inclusion 1—024x028N; Inclusion 2—024x002N; Inclusion 3—024x020N*

**2792—Old Camp-Allor-Puett association**

*Positions on landscape: Foothills, fan piedments*

**Composition**

*Major components:*
Old Camp gravelly loam, 4 to 15 percent slopes—40 percent
Allor gravelly loam, 2 to 8 percent slopes—30 percent
Puett very gravelly loam, 15 to 30 percent slopes—15 percent

*Contrasting inclusions:*
Duco very cobbly loam, 15 to 30 percent slopes—6 percent
Durixerollic Haplargids, fine-loamy, mixed, mesic, 0 to 2 percent slopes—5 percent
Jung very cobbly fine sandy loam, 4 to 15 percent slopes—4 percent

**Characteristics of the Old Camp Soil**

*Classification: Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic*
*Positions on landscape: Convex, north- and west-facing crests and side slopes of foothills*
Parent material: Residuum derived from basalt and andesite
Slope: 4 to 15 percent
Elevation: 5,400 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Thurber needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 50 percent pebbles
Depth: 0 to 2 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline

Depth: 2 to 11 inches
Texture: Very gravelly loam, very cobbly clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline

Depth: 11 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.2 to 1.8 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Allor Soil
Classification: Durixerolic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,400 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 12 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 12 to 34 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 34 to 60 inches
Texture: Gravelly loamy sand, very gravelly loamy sand
Structure: Massive
Consistency: Very hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5.1 to 6.4 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Puett Soil
Classification: Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow
Positions on landscape: South- and east-facing side slopes of foothills
Parent material: Residuum derived from weathered tuff and sandstone
Slope: 15 to 30 percent
Elevation: 5,400 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Wyoming big sagebrush, Indian ricegrass, black sagebrush

Typical Profile
Rock fragments on surface: 55 percent pebbles
Suitability for Wildlife Habitat Elements

Old Camp Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Allor Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Puett Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Old Camp Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Allor Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, shrink-swell
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Puett Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Old Camp and Puett soils—VIIa, nonirrigated; Allor soil—IIIe, irrigated, and VIIc, nonirrigated
Range site: Old Camp soil—027X007N; Allor soil—027X008N; Puett soil—025X025N; Inclusion 1—025X062N; Inclusion 2—027X008N; Inclusion 3—027X032N

2793—Old Camp-Laped association

Positions on landscape: Mountains

Composition

Major components:
Old Camp very cobby loam, 15 to 30 percent slopes—55 percent
Laped very cobby loam, 15 to 30 percent slopes—30 percent
Contrasting inclusions:
Lithic Xerolic Haplargid, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—7 percent
Xerolic Haplargid, fine-loamy, mixed, mesic, 30 to 50 percent slopes—6 percent
Xerolic Camborthid, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—2 percent

Characteristics of the Old Camp Soil

Classification: Lithic Xerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: North- and east-facing side slopes of mountains
Parent material: Residue from basalt and andesite
Slope: 15 to 30 percent
Elevation: 5,400 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Thurber needlegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 2 inches
Texture: Very cobby loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 2 to 11 inches
Texture: Very gravelly loam, very cobby clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Depth: 11 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.9 to 1.2 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Laped Soil

Classification: Typic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: South- and west-facing side slopes of mountains
Parent material: Colluvium and residuum derived from tuff and andesite
Slope: 15 to 30 percent
Elevation: 5,400 to 6,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Typical Profile

Depth: 0 to 6 inches
Texture: Very cobby loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 6 to 18 inches
Texture: Gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 18 to 23 inches
Material: Indurated hardpan
Depth: 23 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to the hardpan: 14 to 20 inches
Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.1 to 2.7 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

**Contrasting Inclusions**

**Inclusion 1**
Classification: Lithic Xerollic Haplorgids, loamy-skeletal, mixed, mesic
Positions on landscape: Convex, lower, south-facing side slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush, shadscale

**Inclusion 2**
Classification: Xerollic Haplorgids, fine-loamy, mixed, mesic
Positions on landscape: Concave, north-facing side slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush

**Inclusion 3**
Classification: Xerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Colluvial toe slopes of mountains
Distinctive present vegetation: Spiny hopsage, Wyoming big sagebrush

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Old Camp Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Laped Soil**
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

**Suitability and Limitations for Selected Uses**

**Old Camp Soil**
Range seeding: Poor—large stones, droughty
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones, slope

**Daily cover for landfill:** Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope, large stones
Local roads and streets: Severe—depth to rock, slope, large stones
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Laped Soil**
Range seeding: Poor—large stones, droughty, too arid
Roadfill: Poor—depth to rock
Topsoil: Poor—cemented pan, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, cemented pan, slope
Local roads and streets: Severe—cemented pan, slope
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**
Land capability classification: Old Camp and Laped soils—VIIb, nonirrigated
Range site: Old Camp soil—024X005N; Laped soil—024X002N; Inclusion 1—024X026N; Inclusion 2—024X005N; Inclusion 3—024X020N

**2797—Old Camp-Colbar association**
Positions on landscape: Foothills

**Composition**
Major components:
Old Camp gravelly loam, 30 to 50 percent slopes—45 percent
Colbar cobblely loam, 15 to 30 percent slopes—25 percent
Old Camp very cobblely loam, 8 to 15 percent slopes—15 percent

Contrasting inclusions:
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—4 percent
Lithic Xerollic Haplorgids, loamy-skeletal, mixed, mesic, 8 to 30 percent slopes—4 percent
Lithic Haplorgids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—4 percent
Rock outcrop—3 percent

**Characteristics of the Old Camp Soil, Steep**
Classification: Lithic Xerollic Haplorgids, loamy-skeletal, mixed, mesic
Positions on landscape: Convex, lower side slopes and shoulder slopes of foothills
Parent material: Residuum derived from basalt and andesite
Slope: 30 to 50 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Thurber needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 2 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Depth: 2 to 11 inches
Texture: Very gravelly loam, very cobbly clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Depth: 11 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Colbar Soil
Classification: Xerollc Haplargids, fine-loamy, mixed, mesic
Positions on landscape: The higher side slopes of foothills
Parent material: Colluvium and residuum derived from rhyolite and andesite
Slope: 15 to 30 percent
Elevation: 5,900 to 6,200 feet
Average annual precipitation: About 9 inches

Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Needlegrass, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent cobbles, 10 percent pebbles
Depth: 0 to 3 inches
Texture: Cobble loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Depth: 3 to 22 inches
Texture: Cobble loam, gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Depth: 22 to 26 inches
Texture: Gravelly loam, cobbly loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Depth: 26 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.17; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Old Camp Soil, Strongly Sloping
Classification: Lithic Xerollc Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Summits and shoulder slopes of foothills
Parent material: Residuum derived from basalt and andesite
Slope: 8 to 15 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Thurber needlegrass. Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles
*Depth:* 0 to 2 inches
*Texture:* Very cobbly loam
*Structure:* Platy
*Consistence:* Slightly hard, very friable
*Reaction:* Mildly alkaline
*Depth:* 2 to 11 inches
*Texture:* Very gravelly loam, very cobbly clay loam
*Structure:* Angular blocky
*Consistence:* Slightly hard, friable
*Reaction:* Mildly alkaline
*Depth:* 11 inches
*Material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches
*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderately slow
*Available water capacity:* 0.9 to 1.2 inches
*Water-supplying capacity:* 8 inches
*Runoff:* Medium
*Hydrologic group:* D
*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—8
*Hazard of erosion:* By water—slight; by wind—slight
*Shrink-swell potential:* Low
*Corrosivity:* To steel—high; to concrete—low
*Potential for frost action:* Moderate

**Contrasting Inclusions**

**Inclusion 1**
*Classification:* Xerollic Camborthids, loamy-skeletal, mixed, mesic
*Positions on landscape:* Concave foot slopes of foothills
*Distinctive present vegetation:* Mountain big sagebrush, bluebunch wheatgrass

**Inclusion 2**
*Classification:* Lithic Xerollic Haplagnids, loamy-skeletal, mixed, mesic
*Positions on landscape:* Slightly convex, higher crests of foothills
*Distinctive present vegetation:* Black sagebrush, bluebunch wheatgrass

**Inclusion 3**
*Classification:* Lithic Haplagnids, loamy-skeletal, mixed, mesic
*Positions on landscape:* South-facing side slopes of foothills
*Distinctive present vegetation:* Shadscale, bud sagebrush

**Inclusion 4**
*Positions on landscape:* Scattered peaks
*Distinctive present vegetation:* None

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Old Camp Soil, Steep**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Colbar Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Old Camp Soil, Strongly Sloping**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses**

**Old Camp Soil, Steep**
*Range seeding:* Poor—eroses easily, droughty
*Roadfill:* Poor—depth to rock, slope
*Topsoil:* Poor—depth to rock, small stones, slope
*Daily cover for landfill:* Poor—depth to rock, small stones, slope
*Shallow excavations:* Severe—depth to rock, slope
*Local roads and streets:* Severe—depth to rock, slope
*Pond reservoir areas:* Severe—depth to rock, slope
*Embankments, dikes, and levees:* Severe—large stones
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Colbar Soil**
*Range seeding:* Fair—too arid, large stones, droughty
*Roadfill:* Poor—depth to rock
*Topsoil:* Poor—large stones, slope
*Daily cover for landfill:* Poor—depth to rock, large stones, slope
*Shallow excavations:* Severe—depth to rock, slope
*Local roads and streets:* Severe—slope
*Pond reservoir areas:* Severe—seepage, slope
*Embankments, dikes, and levees:* Severe—large stones
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Old Camp Soil, Strongly Sloping**
*Range seeding:* Poor—large stones, droughty
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock, large stones
Local roads and streets: Severe—depth to rock, large stones
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Old Camp soil, steep—Vile, nonirrigated; Colbar soil—Vile, nonirrigated; Old Camp soil, strongly sloping—Vlls, nonirrigated
Range site: Old Camp and Colbar soils—024X00S5N;
Inclusion 1—025X01N4; Inclusion 2—024X030N;
Inclusion 3—024X002N

2798—Old Camp-Atlow-Osoll association
Positions on landscape: Foothills

Composition
Major components:
Old Camp gravelly loam, 15 to 30 percent slopes—40 percent
Atlow very gravelly loam, 30 to 50 percent slopes—30 percent
Osoll very gravelly loam, 30 to 50 percent slopes—15 percent
Contrasting inclusions:
Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 30 to 50 percent slopes—5 percent
Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 30 to 50 percent slopes—5 percent
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—2 percent
Rock outcrop—2 percent

Characteristics of the Old Camp Soil
Classification: Lithic Xeric Torriorthents, loamy-skeletal, mixed, mesic
Positions on landscape: Concave, lower side slopes and shoulder slopes of foothills
Parent material: Residuum derived from basalt and andesite
Slope: 15 to 30 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Thurber needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 2 inches
Texture: Gravelly loam
Structure: Puffy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 2 to 11 inches
Texture: Very gravelly loam, very cobbly clay loam
Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Depth: 11 inches
Material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1;
wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Atlow Soil
Classification: Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: The upper side slopes of foothills
Parent material: Residuum derived from chert, argillite, shale, and altered tuff
Slope: 30 to 50 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Black sagebrush, bluegrass, Indian ricegrass

Typical Profile
Rock fragments on surface: 10 percent cobbles, 40 percent pebbles
Lander County, Nevada, South Part

Depth: 0 to 3 inches  
Texture: Very gravelly loam  
Structure: Platy  
Consistency: Slightly hard, very friable  
Reaction: Moderately alkaline  
Salinity: 0 to 2 millimhos per centimeter  

Depth: 3 to 14 inches  
Texture: Very gravelly clay loam  
Structure: Angular blocky  
Consistency: Hard, friable  
Reaction: Moderately alkaline  
Salinity: 0 to 2 millimhos per centimeter  

Depth: 14 inches  
Material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 14 to 20 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderately slow

Available water capacity: 1.1 to 1.3 inches

Water-supplying capacity: 8 inches

Runoff: Rapid

Hydrologic group: D

Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—7

Hazard of erosion: By water—severe; by wind—slight

Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Moderate

**Characteristics of the Osol Soil**

Classification: Typic Durorthods, loamy-skeletal, mixed, mesic, shallow

Positions on landscape: Eroded side slopes of foothills

Parent material: Colluvium that includes loess over residuum

Slope: 30 to 50 percent

Elevation: 5,800 to 6,200 feet

Average annual precipitation: About 8 inches

Average annual air temperature: About 48 degrees F

Frost-free season: About 110 days

Dominant present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

**Typical Profile**

Rock fragments on surface: 5 percent cobbles, 50 percent pebbles

Depth: 0 to 5 inches

Texture: Very gravelly loam

Structure: Platy

Consistency: Slightly hard, friable

Reaction: Moderately alkaline

Depth: 5 to 12 inches

Texture: Very gravelly loam, very gravelly fine sandy loam

Structure: Subangular blocky

Consistency: Slightly hard, friable

Reaction: Strongly alkaline

Depth: 12 to 35 inches

Material: Indurated hardpan

Structure: Platy

Consistency: Extremely hard, extremely firm

Depth: 35 inches

Material: Unweathered bedrock

**Soil and Water Features**

Depth to the hardpan: 8 to 14 inches

Depth to bedrock: 20 to 40 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderately rapid

Available water capacity: 0.6 to 1.0 inch

Water-supplying capacity: 6 inches

Runoff: Rapid

Hydrologic group: D

Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—7

Hazard of erosion: By water—severe; by wind—slight

Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Low

**Contrasting Inclusions**

**Inclusion 1**

Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic

Positions on landscape: Crests of foothills

Distinctive present vegetation: Black sagebrush, bluegrass

**Inclusion 2**

Classification: Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic

Positions on landscape: Convex, eroded side slopes below areas of Rock outcrop on foothills

Distinctive present vegetation: Wyoming big sagebrush, desert needlegrass

**Inclusion 3**

Classification: Xerollic Camborthods, loamy-skeletal, mixed, mesic

Positions on landscape: Interhill drainageways

Distinctive present vegetation: Big sagebrush, bluebunch wheatgrass

**Inclusion 4**

Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Old Camp Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Atlow Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Osoll Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Old Camp Soil
Range seeding: Poor—eroses easily, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Atlow Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Osoll Soil
Range seeding: Poor—droughty, small stones, too arid
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—cemented pan, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, cemented pan, slope
Local roads and streets: Severe—cemented pan, slope
Pond reservoir areas: Severe—cemented pan, slope
Embarkments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines

Interpretive Groups

Land capability classification: Old Camp, Atlow, and Osoll soils—VIIa, nonirrigated
Range site: Old Camp soil—024X005N; Atlow soil—024X030N; Osoll soil—024X002N; Inclusion 1—024X030N; Inclusion 2—024X045N; Inclusion 3—025X013N; Inclusion 4—none

3001—Barrier-Kobeh association

Positions on landscape: Fan piedmonts

Composition

Major components:
Barrier cobbly loam, 4 to 15 percent slopes—65 percent
Kobeh gravelly fine sandy loam, 2 to 8 percent slopes—20 percent
Contrasting inclusions:
Xerolitic Durargids, loamy, mixed, frigid, shallow, 2 to 8 percent slopes—8 percent
Haploxerolic Durorthids, loamy-skeletal, mixed, frigid, 2 to 8 percent slopes—5 percent
Haploxerolic Nadurargids, fine, montmorillonitic, frigid, 2 to 8 percent slopes—2 percent

Characteristics of the Barrier Soil

Classification: Haploxerolic Durorthids, loamy, mixed, frigid

Positions on landscape: Summits and side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 15 percent
Elevation: 6,800 to 7,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Indian ricegrass, needlegrass, black sagebrush, small rabbitbrush

Typical Profile

Rock fragments on surface: 10 percent cobbles, 15 percent pebbles
Depth: 0 to 7 inches
Texture: Cobby loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 7 to 12 inches
Texture: Gravelly loam, gravelly sandy loam, fine sandy loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 12 to 27 inches
Material: Cemented hardpan

Depth: 27 to 60 inches
Texture: Very cobbly loamy sand
Structure: Massive
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features
Depth to the hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.2 to 1.7 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Kobeh Soil

Classification: Durixerolic Camborthids, loamy-skeletal, mixed, frigid
Positions on landscape: Inset fans
Parent material: Mixed alluvium that includes volcanic ash
Slope: 2 to 8 percent
Elevation: 6,800 to 7,400 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Indian ricegrass, needleandthread, Wyoming big sagebrush

Typical Profile
Depth: 0 to 7 inches
Texture: Gravely fine sandy loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 7 to 20 inches
Texture: Gravely sandy loam, gravelly fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 20 to 60 inches
Texture: Gravely fine sandy loam to very gravelly sand
Structure: Massive
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.6 to 6.0 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Xerolic Durargids, loamy, mixed, frigid, shallow
Positions on landscape: Slightly convex shoulder slopes of fan piedmont remnants
Distinctive present vegetation: Black sagebrush, Indian ricegrass

Inclusion 2
Classification: Haploxeric Durorthids, loamy-skeletal, mixed, frigid
Positions on landscape: Foot slopes of fan piedmont remnants
Distinctive present vegetation: Black sagebrush, Indian ricegrass

Inclusion 3
Classification: Haploxeric Nadurargids, fine, montmorillonitic, frigid
Positions on landscape: Summits of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush
**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Barrier Soil**
*Wild herbaceous plants (nonirrigated): Poor*
*Shrubs (nonirrigated): Poor*

**Koheb Soil**
*Wild herbaceous plants (nonirrigated): Fair*
*Shrubs (nonirrigated): Fair*

**Suitability and Limitations for Selected Uses**

**Barrier Soil**
*Range seeding: Poor—droughty, excess salt*
*Roadfill: Good*
*Topsoil: Poor—cemented pan, large stones*
*Daily cover for landfill: Poor—cemented pan, large stones*
*Shallow excavations: Severe—cemented pan, cutbanks cave*
*Local roads and streets: Moderate—cemented pan, slope, frost action*
*Pond reservoir areas: Severe—cemented pan, slope*
*Embankments, dikes, and levees: Severe—seepage*
*Sand: Improbable source—excess fines*
*Gravel: Improbable source—excess fines*

**Koheb Soil**
*Range seeding: Fair—too arid*
*Roadfill: Good*
*Topsoil: Poor—small stones, area reclaim*
*Daily cover for landfill: Poor—seepage, too sandy, small stones*
*Shallow excavations: Severe—cutbanks cave*
*Local roads and streets: Slight*
*Pond reservoir areas: Severe—seepage*
*Embankments, dikes, and levees: Severe—seepage*
*Sand: Probable source*
*Gravel: Probable source*

**Interpretive Groups**

**Land capability classification:** Barrier soil—VIls, nonirrigated; Koheb soil—IVe, irrigated, and VIIc, nonirrigated

**Range site:** Barrier soil—028B011N; Koheb soil—028B010N; Inclusions 1 and 2—028B011N; Inclusion 3—028B017N

**3011—Defler-Orovada association**

**Positions on landscape:** Broad inset fans and fan skirts

**Composition**

Defler gravelly fine sandy loam, 0 to 2 percent slopes—70 percent

Orovada gravelly fine sandy loam, gravelly substratum, 0 to 2 percent slopes—20 percent

**Contrasting inclusions:**
Silverado sandy loam, 0 to 4 percent slopes—5 percent
Orovada fine sandy loam, gullied, 0 to 4 percent slopes—3 percent
Wholan very fine sandy loam, 0 to 4 percent slopes—2 percent

**Characteristics of the Defler Soil**

**Classification:** Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic

**Positions on landscape:** Smooth to slightly convex inset fans

**Parent material:** Mixed alluvium that includes loess and volcanic ash

**Slope:** 0 to 2 percent

**Elevation:** 6,400 to 6,800 feet

**Average annual precipitation:** About 9 inches

**Average annual air temperature:** About 47 degrees F

**Frost-free season:** About 100 days

**Dominant present vegetation:** Indian ricegrass, bottlebrush squirreltail, winterfat

**Typical Profile**

**Rock fragments on surface:** 30 percent pebbles

**Depth:** 0 to 4 inches

**Texture:** Gravelly fine sandy loam

**Structure:** Platy

**Consistence:** Slightly hard, very friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Sodicity (SAR):** 0 to 2

**Depth:** 4 to 38 inches

**Texture:** Very gravelly fine sandy loam, very gravelly sandy loam

**Structure:** Massive

**Consistence:** Soft, very friable

**Reaction:** Moderately alkaline

**Salinity:** 0 to 4 millimhos per centimeter

**Sodicity (SAR):** 0 to 2

**Depth:** 38 to 60 inches

**Texture:** Stratified very gravelly sandy loam to extremely gravelly coarse sand

**Structure:** Massive

**Consistence:** Hard, very friable

**Reaction:** Moderately alkaline

**Salinity:** 8 to 16 millimhos per centimeter

**Sodicity (SAR):** 0 to 5

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches
Frequency of flooding: Occasional for very brief periods in December through August
Permeability: Moderately rapid
Available water capacity: 3.0 to 4.8 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Orovada Soil
Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fan remnants
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 0 to 2 percent
Elevation: 6,400 to 6,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 5 to 15 inches
Texture: Fine sandy loam, loam, silt loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 15 to 40 inches
Texture: Fine sandy loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 40 to 60 inches
Texture: Stratified gravelly sandy loam to very gravelly sand
Structure: Massive

Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 6 to 8 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerolic Camborthids, coarse-loamy, mixed, frigid
Positions on landscape: The upper fan skirt remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Recently dissected inset fans
Distinctive present vegetation: Wyoming big sagebrush, basin big sagebrush

Inclusion 3
Classification: Typic Camborthids, coarse-silty, mixed, mesic
Positions on landscape: The lower, convex fan skirt margins
Distinctive present vegetation: Indian ricegrass, winterfat

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Defler Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Defler Soil
Range seeding: Poor—droughty, too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—flooding
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—small stones
Gravel: Probable source

Orovada Soil
Range seeding: Fair—too arid, small stones
Roadfill: Good
Topsoil: Poor—area reclaim
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Probable source
Gravel: Improbable source—too sandy

Interpretive Groups
Land capability classification: Defler soil—IVw, irrigated, and VIlw, nonirrigated; Orovada soil—IIIc, irrigated, and Vlc, nonirrigated
Range site: Defler soil—028B013N; Orovada soil—028B010N; Inclusion 1—028B010N; Inclusion 2—028B009N; Inclusion 3—028B013N

3050—Novacan cobbly loam, 2 to 8 percent slopes
Positions on landscape: Fan piedmonts

Composition
Major component:
Novacan cobbly loam, 2 to 8 percent slopes—85 percent
Contrasting inclusions:
Durixerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—6 percent
Haploxerollic Durorthids, loamy, mixed, mesic, shallow, 2 to 8 percent slopes—6 percent
Typic Nadurargids, fine, montmorillonitic, mesic, 2 to 8 percent slopes—3 percent

Characteristics of the Novacan Soil
Classification: Haploxerollic Durargids, fine, montmorillonitic, mesic
Positions on landscape: Summits of fan piedmont remnants
Parent material: Mixed volcanic alluvium
Slope: 2 to 8 percent
Elevation: 6,500 to 7,000 feet

Average annual precipitation: About 9 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Indian ricegrass, needleandthread, black sagebrush

Typical Profile
Rock fragments on surface: 25 percent cobbles, 10 percent pebbles
Depth: 0 to 5 inches
Texture: Cobbly loam
Structure: Prismatic
Consistence: Soft, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Depth: 5 to 24 inches
Texture: Clay, gravelly clay
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 24 to 45 inches
Material: Cemented hardpan
 Depth: 45 to 60 inches
Texture: Very cobbly loamy sand
Structure: Massive
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to the hardpan: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.0 to 3.7 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Classification: Haploxerolic Durothids, loamy, mixed, mesic, shallow
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Black sagebrush

Inclusion 3
Classification: Typic Nadurrgids, fine, montmorrillonitic, mesic
Positions on landscape: Slightly convex summits of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Range seeding: Poor—rooting depth
Roadfill: Poor—cemented pan
Topsoil: Poor—too clayey, cemented pan, small stones
Daily cover for landfills: Poor—cemented pan, large stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Moderate—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Novacan soil—VII, nonirrigated
Range site: Novacan soil—028B011N; Inclusion 1—028B010N; Inclusion 2—028B011N; Inclusion 3—028B017N

3071—Allor-Wieland association
Positions on landscape: Fan piedmonts

Composition
Major components:
Allor gravelly loam, 4 to 15 percent slopes—50 percent
Wieland gravelly loam, 4 to 15 percent slopes—35 percent

Contrasting Inclusions:
Haploxerolic Durargids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—7 percent
Durixerolic Hapludands, fine, montmorillonitic, mesic, 0 to 4 percent slopes—4 percent
Haploxerolic Durargids, fine, montmorillonitic, mesic, 4 to 15 percent slopes—4 percent

Characteristics of the Allor Soil
Classification: Durixerolic Hapludands, fine-loamy, mixed, mesic
Positions on landscape: The lower fan piedmont remnants and foot slopes
Parent material: Mixed alluvium
Slope: 4 to 15 percent
Elevation: 6,200 to 6,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 12 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 12 to 34 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 34 to 60 inches
Texture: Gravelly loamy sand, very gravelly loamy sand
Structure: Massive
Consistence: Very hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5.1 to 6.4 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Wieland Soil**

*Classification:* Durixerolic Haplargids, fine, montmorillonitic, mesic
*Positions on landscape:* The highest summits of fan piedmont remnants
*Parent material:* Mixed alluvium that includes loess and volcanic ash
*Slope:* 4 to 15 percent
*Elevation:* 6,200 to 6,800 feet
*Average annual precipitation:* About 9 inches
*Average annual air temperature:* About 48 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Indian ricegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 20 percent pebbles
*Depth:* 0 to 8 inches
*Texture:* Gravelly loam
*Structure:* Platy
*Consistency:* Soft, very friable
*Reaction:* Moderately alkaline
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 8 to 20 inches
*Texture:* Gravelly clay
*Structure:* Prismatic
*Consistency:* Hard, firm
*Reaction:* Moderately alkaline
*Salinity:* 0 to 2 millimhos per centimeter

*Depth:* 20 to 60 inches
*Texture:* Gravelly loam, gravelly sandy loam
*Structure:* Massive
*Consistency:* Hard, firm
*Reaction:* Moderately alkaline
*Salinity:* 0 to 2 millimhos per centimeter

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Slow
*Available water capacity:* 6 to 9 inches
*Water-supplying capacity:* 9 inches
*Runoff:* Medium
*Hydrologic group:* C
*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—6
*Hazard of erosion:* By water—slight; by wind—slight
*Shrink-swell potential:* High

*Corrosivity:* To steel—high; to concrete—low
*Potential for frost action:* Moderate

**Contrasting Inclusions**

**Inclusion 1**
*Classification:* Durixerolic Haplargids, fine-loamy, mixed, mesic
*Positions on landscape:* Nonburied fan piedmont remnants
*Distinctive present vegetation:* Wyoming big sagebrush

**Inclusion 2**
*Classification:* Durixerolic Haplargids, fine, montmorillonitic, mesic
*Positions on landscape:* Fan drainageways
*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

**Inclusion 3**
*Classification:* Durixerolic Haplargids, fine, montmorillonitic, mesic
*Positions on landscape:* Side slopes of fan piedmont remnants
*Distinctive present vegetation:* Wyoming big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Allor Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Wieland Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses**

**Allor Soil**
*Range seeding:* Fair—too arid
*Roadfill:* Good
*Topsoil:* Poor—small stones, area reclaim
*Daily cover for landfill:* Poor—small stones
*Shallow excavations:* Severe—cutbanks cave
*Local roads and streets:* Moderate—frost action, shrink-swell, slope
*Pond reservoir areas:* Severe—slope
*Embankments, dikes, and levees:* Severe—seepage
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Wieland Soil**
*Range seeding:* Poor—rooting depth
*Roadfill:* Good
*Topsoil:* Poor—small stones, area reclaim
*Daily cover for landfill:* Poor—small stones
*Shallow excavations:* Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—slope
Ebankments, dikes, and levees: Moderate—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Allor soil—IVe, irrigated, and VIlc, nonirrigated; Wieland soil—VI, nonirrigated
Range site: Allor and Wieland soils—028B010N; Inclusion 1—028B010N; Inclusion 2—028B003N; Inclusion 3—028B010N

3072—Allor-Orovada association, moderately sloping
Positions on landscape: Fan piedmonts

Composition
Major components:
Allor gravelly loam, 4 to 8 percent slopes—55 percent
Orovada fine sandy loam, 2 to 4 percent slopes—30 percent
Contrasting inclusions:
Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent
Durixerollic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent
Durixerollic Haplargids, fine-loamy, mixed, mesic, 4 to 8 percent slopes—5 percent

Characteristics of the Allor Soil
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 8 percent
Elevation: 5,800 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 12 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 12 to 34 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 34 to 60 inches
Texture: Gravelly loamy sand, very gravelly loamy sand
Structure: Massive
Consistency: Very hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5.1 to 6.4 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Orovada Soil
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,800 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: The upper part of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Adjacent to channels on inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Fan aprons
Distinctive present vegetation: Black sagebrush, bluegrass, shadscale

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Allor Soil
Wild herbaceous plants (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Allor Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, shrink-swell
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Allor soil—Ile, irrigated, and Vllc, nonirrigated; Orovada soil—Ile, irrigated, and Vlc, nonirrigated
Range site: Allor and Orovada soils—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—024X030N

3073—Allor-Kelk association
Positions on landscape: Fan piedmonts, fan skirts

Composition

Major components:
Allor gravelly loam, 0 to 2 percent slopes—50 percent
Kelk very fine sandy loam, lacustrine substratum, 0 to 2 percent slopes—35 percent

Contrasting inclusions:
Durixerollic Camborthids, coarse-silty, mixed, mesic, 0 to 2 percent slopes—8 percent
Durixerollic Camborthids, fine-loamy, mixed, mesic, 0 to 2 percent slopes—7 percent
Characteristics of the Allor Soil

Classification: Durixerollic Haplargids, fine-loamy, mixed, mesic

Positions on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope: 0 to 2 percent
Elevation: 6,300 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

Rock fragments on surface: 30 percent pebbles
Depth: 0 to 12 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 12 to 34 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 34 to 60 inches
Texture: Gravelly loamy sand, very gravelly loamy sand
Structure: Massive
Consistence: Very hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5.1 to 6.4 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Kelk Soil

Classification: Durixerollic Camborthids, fine-silty, mixed, mesic

Positions on landscape: Fan skirts
Parent material: Loess that includes volcanic ash, mixed alluvium
Slope: 0 to 2 percent
Elevation: 6,300 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass

Typical Profile

Depth: 0 to 4 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 4 to 12 inches
Texture: Silt loam
Structure: Massive
Consistence: Hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 12 to 40 inches
Texture: Silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 40 to 60 inches
Texture: Silty clay loam
Structure: Massive
Consistence: Hard, firm
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 9 to 11 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.43; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Moderate
Contrasting Inclusions

Inclusion 1
Classification: Durixerolic Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Fan aprons
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Durixerolic Camborthids, fine-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Allor Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Kelk Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Allor Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, shrink-swell
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Kelk Soil
Range seeding: Fair—too arid
Roadfill: Fair—thin layer, shrink-swell
Topsoil: Good
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding, frost action, shrink-swell
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Allor soil—IIs, irrigated, and VIIc, nonirrigated; Kelk soil—Ilc, irrigated, and Vlc, nonirrigated

3074—Allor-Orovada association, nearly level

Positions on landscape: Fan piedmonts, fan skirts

Composition

Major components:
Allor fine sandy loam, 0 to 2 percent slopes—50 percent
Orovada very fine sandy loam, 0 to 2 percent slopes—35 percent

Contrasting inclusions:
Duric Camborthids, coarse-loamy, mixed, mesic, 0 to 2 percent slopes—7 percent
Aeric Halaquepts, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent
Whoian silt loam, 0 to 2 percent slopes—3 percent

Characteristics of the Allor Soil
Classification: Durixerolic Haplorthids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope: 0 to 2 percent
Elevation: 6,100 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 12 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 12 to 34 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 34 to 60 inches
Texture: Gravelly loamy sand, very gravelly loamy sand
Structure: Massive
Consistence: Very hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5.1 to 6.4 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Orovada Soil

Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Loess mantle that is high in content of
volcanic ash over mixed alluvium
Slope: 0 to 2 percent
Elevation: 6,100 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush,
bluegrass, Indian ricegrass

Typical Profile

Depth: 0 to 8 inches
Texture: Very fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features

Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.8 to 10.0 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.49; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
 Positions on landscape: The lower fan skirt margins
 Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Classification: Aeric Halauquepts, coarse-loamy, mixed, mesic
 Positions on landscape: Adjacent lagoon remnants
 Distinctive present vegetation: Black greasewood, basin big sagebrush

Inclusion 3
Classification: Typic Camborthids, coarse-silty, mixed, mesic
 Positions on landscape: Inset fans
 Distinctive present vegetation: Winterfat, Indian ricegrass

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Allor Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Allor Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, shrink-swell
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Allor soil—IIls, irrigated, and Vilc, nonirrigated; Orovada soil—IIlc, irrigated, and Vilc, nonirrigated
Range site: Allor and Orovada soils—028B010N; Inclusion 1—024X002N; Inclusion 2—024X022N; Inclusion 3—024X004N

3080—Zaidy-Ricert association

Composition
Major components:
Zaidy very gravelly sandy loam, 2 to 8 percent slopes—60 percent
Ricert gravelly fine sandy loam, 2 to 8 percent slopes—25 percent
Contrasting inclusions:
Durixerollic Haplorgids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—4 percent
Durixerollic Haplorgids, loamy-skeletal, mixed, mesic, 4 to 8 percent slopes—4 percent
Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow, 8 to 15 percent slopes—4 percent
Xerollic Haplorgids, loamy, mixed, mesic, 8 to 15 percent slopes—3 percent

Characteristics of the Zaidy Soil
Classification: Haploxerollic Durargids, fine-loamy, mixed, mesic
Positions on landscape: The upper fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days

Dominant present vegetation: Indian ricegrass, bluegrass, black sagebrush

Typical Profile
Rock fragments on surface: 5 percent cobbles, 50 percent pebbles
Depth: 0 to 5 inches
Texture: Very gravelly sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 5 to 25 inches
Texture: Loam, clay loam, gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 6 to 13
Depth: 25 to 60 inches
Material: Cemented hardpan

Soil and Water Features
Depth to the hardpan: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.8 to 3.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.05; T value—2; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Ricert Soil
Classification: Duric Natragids, fine-loamy, mixed, mesic
Positions on landscape: The lower fan piedmont remnants
Parent material: Thin loess deposits over mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass
Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 6 to 18 inches
Texture: Loam, clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Strongly alkaline
Salinity: 2 to 4 millimhos per centimeter
Sodicity (SAR): 25 to 45
Depth: 18 to 60 inches
Texture: Very gravelly sandy loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 46 to 60

Inclusion 3
Classification: Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow
Positions on landscape: The highest areas of fan piedmont remnants
Distinctive present vegetation: Black sagebrush

Inclusion 4
Classification: Xerollic Haplargids, loamy, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants near the front of mountains
Distinctive present vegetation: Wyoming big sagebrush, needleandthread

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Zaidy Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Ricer Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Zaidy Soil
Range seeding: Poor—small stones
Roadfill: Poor—cemented pan
Topsoil: Poor—small stones
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan, shrink-swell
Pond reservoir areas: Moderate—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Ricer Soil
Range seeding: Poor—too arid, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Zaidy soil—IVs, irrigated,
and Vlls, nonirrigated; Ricert soil—IVe, irrigated, and Vlls, nonirrigated

Range site: Zaidy soil—028B011N; Ricert soil—
024X002N; Inclusion 1—028B016N; Inclusion 2—
028B010N; Inclusion 3—028B016N; Inclusion 4—
028B010N

3081—Zaidy-Allor association

Positions on landscape: Fan piedmonts

Composition

Major components:
Zaidy very gravelly fine sandy loam, 8 to 15 percent
slopes—55 percent
Allor gravelly loam, 4 to 15 percent slopes—30 percent

Contrasting inclusions:
Durixerollic Haplargids, fine-loamy, mixed, mesic, 2 to 8
percent slopes—8 percent
Haploxerollic Durargids, fine-loamy, mixed, mesic, 15 to
30 percent slopes—4 percent
Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 2
to 8 percent slopes—3 percent

Characteristics of the Zaidy Soil

Classification: Haploxerollic Durargids, fine-loamy,
mixed, mesic

Positions on landscape: The higher fan piedmont
remnants

Parent material: Mixed alluvium

Slope: 8 to 15 percent

Elevation: 6,700 to 6,800 feet

Average annual precipitation: About 9 inches

Average annual air temperature: About 47 degrees F

Frost-free season: About 100 days

Dominant present vegetation: Indian ricegrass,
bluegrass, black sagebrush

Typical Profile

Rock fragments on surface: 5 percent cobbles, 50
percent pebbles

Depth: 0 to 5 inches

Texture: Very gravelly fine sandy loam

Structure: Subangular blocky

Consistence: Slightly hard, very friable

Reaction: Mildly alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 5

Depth: 5 to 25 inches

Texture: Loam, clay loam, gravelly clay loam

Structure: Subangular blocky

Consistence: Slightly hard, friable

Reaction: Moderately alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 6 to 13

Depth: 25 to 60 inches

Material: Cemented hardpan

Soil and Water Features

Depth to the hardpan: 20 to 30 inches

Depth to a seasonal high water table: More than 60
inches

Frequency of flooding: None

Permeability: Moderately slow

Available water capacity: 2.8 to 3.4 inches

Water-supplying capacity: 8 inches

Runoff: Medium

Hydrologic group: C

Erosion factors (upper layer): K value—0.10; T value—2;
wind erodibility group—5

Hazard of erosion: By water—slight; by wind—moderate

Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Moderate

Characteristics of the Allor Soil

Classification: Durixerollic Haplargids, fine-loamy, mixed,
mesic

Positions on landscape: The lower fan piedmont
remnants

Parent material: Mixed alluvium

Slope: 4 to 15 percent

Elevation: 6,700 to 6,800 feet

Average annual precipitation: About 9 inches

Average annual air temperature: About 48 degrees F

Frost-free season: About 110 days

Dominant present vegetation: Wyoming big sagebrush,
bluegrass, Indian ricegrass

Typical Profile

Rock fragments on surface: 30 percent pebbles

Depth: 0 to 12 inches

Texture: Gravelly loam

Structure: Subangular blocky

Consistence: Soft, very friable

Reaction: Mildly alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 2

Depth: 12 to 34 inches

Texture: Gravelly clay loam

Structure: Subangular blocky

Consistence: Slightly hard, friable

Reaction: Mildly alkaline

Salinity: 0 to 2 millimhos per centimeter

Sodicity (SAR): 0 to 2

Depth: 34 to 60 inches

Texture: Gravelly loamy sand, very gravelly loamy sand

Structure: Massive
Lander County, Nevada, South Part

Consistence: Very hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5.0 to 7.5 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerolic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: Fan aprons
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Haploxerolic Durargids, fine-loamy, mixed, mesic
Positions on landscape: South-facing side slopes of fan piedmont remnants
Distinctive present vegetation: Indian ricegrass, galleta, Wyoming big sagebrush, shadscale

Inclusion 3
Classification: Durixerolic Durargids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Zaidy Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Allor Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Zaidy Soil
Range seeding: Poor—small stones
Roadfill: Poor—cemented pan

Topsoil: Poor—small stones
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan, shrink-swell
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Allor Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, shrink-swell, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Zaidy soil—IVs, irrigated, and VII, nonirrigated; Allor soil—IVe, irrigated, and VIIc, nonirrigated
Range site: Zaidy soil—028B011N; Allor soil—028B010N; Inclusion 1—028B010N; Inclusion 2—024X045N; Inclusion 3—028B010N

3091—Packer-Newlands association
Positions on landscape: Mountains

Composition

Major components:
Packer extremely gravelly loam, 15 to 30 percent slopes—60 percent
Packer extremely cobbly loam, 8 to 15 percent slopes—15 percent
Newlands loam, 8 to 15 percent slopes—10 percent

Contrasting inclusions:
Argic Cryoborolls, clayey-skeletal, montmorillonitic, 8 to 15 percent slopes—8 percent
Argic Lithic Cryoborolls, loamy-skeletal, mixed, 8 to 15 percent slopes—4 percent
Rock outcrop—3 percent

Characteristics of the Packer Soil
Classification: Argic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: South-, east-, and west-facing side slopes of mountains
Parent material: Mixed residuum that includes loess and volcanic ash
Slope: 15 to 30 percent
Elevation: 7,800 to 10,000 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

**Typical Profile**

Rock fragments on surface: 20 percent cobbles and stones, 70 percent pebbles
Depth: 0 to 10 inches
Texture: Extremely gravelly loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Neutral

Depth: 10 to 21 inches
Texture: Extremely cobbly clay loam, extremely cobbly loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Depth: 21 to 60 inches
Texture: Extremely cobbly sandy loam, extremely cobbly loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Neutral

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.4 to 5.2 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.15; T value—5; wind erodibility group—B
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Packer Soil, Cobbly**

Classification: Argic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Windswept crests of mountains
Parent material: Mixed residuum that includes loess and volcanic ash
Slope: 8 to 15 percent
Elevation: 7,800 to 10,000 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 42 degrees F

Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

**Typical Profile**

Rock fragments on surface: 40 percent cobbles, 30 percent pebbles
Depth: 0 to 10 inches
Texture: Extremely cobbly loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Neutral

Depth: 10 to 21 inches
Texture: Extremely cobbly sandy loam, extremely cobbly loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Depth: 21 to 60 inches
Texture: Extremely cobbly clay loam, extremely cobbly loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Neutral

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.4 to 5.2 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.15; T value—5; wind erodibility group—B
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Newlands Soil**

Classification: Argic Cryoborolls, fine-loamy, mixed
Positions on landscape: Concave, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from andesite and rhyolite
Slope: 8 to 15 percent
Elevation: 7,800 to 10,000 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Mountain brome, needlegrass, mountain big sagebrush
Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 10 inches
Texture: Loam
Structure: Granular
Consistence: Soft, very friable
Reaction: Neutral
Depth: 10 to 46 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral
Depth: 46 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5.5 to 6.7 inches
Water-supplying capacity: 14 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.28; T value—3;
wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Argic Cryoborolls, clayey-skeletal, montmorillonitic
Positions on landscape: The lower, north-facing side slopes of mountains
Distinctive present vegetation: Low sagebrush, Idaho fescue

Inclusion 2
Classification: Argic Lithic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Crests of mountains adjacent to areas of Rock outcrop
Distinctive present vegetation: Low sagebrush, black sagebrush

Inclusion 3
Positions on landscape: Escarpments
Distinctive present vegetation: None

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Packer Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Packer Soil, Cobbly
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Newlands Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Packer Soil
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embarkments, dikes, and levees: Severe—seepage, large stones
Sand: Improvable source—excess fines, large stones
Gravel: Improvable source—excess fines, large stones

Packer Soil, Cobbly
Range seeding: Poor—large stones
Roadfill: Poor—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—large stones
Local roads and streets: Severe—large stones
Pond reservoir areas: Severe—seepage, slope
Embarkments, dikes, and levees: Severe—seepage, large stones
Sand: Improvable source—excess fines, large stones
Gravel: Improvable source—excess fines, large stones

Newlands Soil
Range seeding: Good
Roadfill: Fair—depth to rock, thin layer
Topsoil: Poor—small stones, depth to rock
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—depth to rock, slope
Local roads and streets: Moderate—slope, shrink-swell, frost action
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Moderate—thin layer
Sand: Improvable source—excess fines
Gravel: Improvable source—excess fines

Interpretive Groups

Land capability classification: Packer soils—VIIa, nonirrigated; Newlands soil—IVe, irrigated, and Vlc, nonirrigated
Range site: Packer soils—024X016N; Newlands soil—028B029N; Inclusion 1—024X027N; Inclusion 2—024X016N; Inclusion 3—none

3092—Packer-Hapgood-Rock outcrop association

Positions on landscape: Mountains

Composition

Major components:
Packer extremely gravelly loam, 8 to 15 percent slopes—50 percent
Hapgood gravelly loam, 8 to 15 percent slopes—20 percent
Rock outcrop—15 percent

Contrasting inclusions:
Layview extremely cobbly loam, 4 to 15 percent slopes—8 percent
Entic Cryoborolls, loamy-skeletal, mixed, 8 to 15 percent slopes—4 percent
Pachic Cryoborolls, loamy-skeletal, mixed, 15 to 30 percent slopes—3 percent

Characteristics of the Packer Soil

Classification: Argic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Convex, windswept crests and upper side slopes of mountains
Parent material: Mixed residuum that includes loess and volcanic ash
Slope: 8 to 15 percent
Elevation: 8,500 to 10,000 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

Typical Profile

Rock fragments on surface: 70 percent pebbles
Depth: 0 to 10 inches
Texture: Extremely gravelly loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Neutral
Depth: 10 to 21 inches
Texture: Extremely cobbly clay loam, extremely cobbly loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral
Depth: 21 to 60 inches

Texture: Extremely cobbly sandy loam, extremely cobbly loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.6 to 5.0 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—3; wind erodibility group—B
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Hapgood Soil

Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Concave, protected, lower side slopes of mountains
Parent material: Colluvium that includes loess and volcanic ash
Slope: 8 to 15 percent
Elevation: 8,500 to 10,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 17 to 40 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 40 to 60 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Neutral
Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.4 inches
Water-supplying capacity: 16 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop
Positions on landscape: Scattered peaks

Contrasting Inclusions

Inclusion 1
Classification: Argic Lithic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Crests of mountains near areas of Rock outcrop
Distinctive present vegetation: Low sagebrush, black sagebrush, Idaho fescue

Inclusion 2
Classification: Entic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Side slopes of mountains in areas where snow accumulates
Distinctive present vegetation: Needlegrass, balsamroot

Inclusion 3
Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: North-facing side slopes of mountains
Distinctive present vegetation: Oceanspray, mountain big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Packer Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Hapgood Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Packer Soil
Range seeding: Poor—small stones

Roadfill: Fair—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfills: Poor—small stones
Shallow excavations: Moderate—slope, large stones
Local roads and streets: Moderate—slope, frost action, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Hapgood Soil
Range seeding: Fair—small stones
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfills: Poor—small stones
Shallow excavations: Moderate—slope
Local roads and streets: Moderate—slope, frost action
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Packer soil—VII, nonirrigated; Hapgood soil—VIs, nonirrigated; Rock outcrop—VIIIs, nonirrigated
Range site: Packer soil—024X016N; Hapgood soil—024X032N; Rock outcrop—none; Inclusion 1—024X016N; Inclusion 2—025X028N; Inclusion 3—024X034N

3093—Packer-Layview-Hapgood association
Positions on landscape: Mountains

Composition

Major components:
Packer very gravelly loam, 15 to 50 percent slopes—40 percent
Layview very gravelly sandy loam, 8 to 15 percent slopes—25 percent
Hapgood fine sandy loam, 30 to 50 percent slopes—20 percent
Contrasting inclusions:
Cumulic Haplaquolls, fine-loamy, mixed, frigid, 4 to 8 percent slopes—5 percent
Rock outcrop—4 percent
Itca very cobbly loam, 15 to 30 percent slopes—3 percent
Argic Cryoborolls, clayey-skeletal, montmorillonitic, 30 to 50 percent slopes—3 percent
Characteristics of the Packer Soil

Classification: Argic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Convex side slopes of mountains
Parent material: Mixed residuum that includes loess and volcanic ash
Slope: 15 to 50 percent
Elevation: 8,000 to 10,000 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 40 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

Typical Profile

Rock fragments on surface: 55 percent pebbles
Depth: 0 to 10 inches
Texture: Very gravelly sandy loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Neutral

Depth: 10 to 21 inches
Texture: Extremely cobbly clay loam, extremely cobbly loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Depth: 21 to 60 inches
Texture: Extremely cobbly sandy loam, extremely cobbly loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 6 to 8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Layview Soil

Classification: Argic Lithic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Windswept crests of mountains
Parent material: Residuum derived from andesite, rhyolite, and tuff
Slope: 8 to 15 percent
Elevation: 8,000 to 10,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

Typical Profile

Rock fragments on surface: 50 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 3 to 12 inches
Texture: Very gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 12 inches
Material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.0 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Hapgood Soil

Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Concave side slopes of mountains
Parent material: Colluvium that includes loess and volcanic ash
Slope: 30 to 50 percent
Elevation: 8,000 to 10,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, mountain
brome, bluegrass, mountain big sagebrush, serviceberry

**Typical Profile**

*Rock fragments on surface:* 10 percent pebbles
*Depth:* 0 to 17 inches
*Texture:* Fine sandy loam
*Structure:* Subangular blocky
*Consistence:* Slightly hard, very friable
*Reaction:* Neutral
*Depth:* 17 to 40 inches
*Texture:* Very gravelly loam
*Structure:* Subangular blocky
*Consistence:* Slightly hard, very friable
*Reaction:* Neutral
*Depth:* 40 to 60 inches
*Texture:* Very cobbly loam, very gravelly sandy loam
*Structure:* Massive
*Consistence:* Soft, very friable
*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderate
*Available water capacity:* 6 to 7 inches
*Water-supplying capacity:* 14 inches
*Runoff:* Rapid
*Hydrologic group:* B
*Erosion factors (upper layer):* K value—0.20; T value—3; wind erodibility group—3
*Hazard of erosion:* By water—severe; by wind—slight
*Shrink-swell potential:* Low
*Corrosivity:* To steel—moderate; to concrete—low
*Potential for frost action:* Moderate

**Contrasting Inclusions**

**Inclusion 1**
*Classification:* Cumulic Haplauquolls, fine-loamy, mixed, frigid
*Positions on landscape:* Near seeps and springs, along canyon bottoms
*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

**Inclusion 2**
*Positions on landscape:* Scattered peaks
*Distinctive present vegetation:* None

**Inclusion 3**
*Classification:* Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
*Positions on landscape:* The lower, south- and west-facing side slopes of mountains

**Distinctive present vegetation:** Singleleaf pinyon, mountain big sagebrush

**Inclusion 4**
*Classification:* Argic Cryoborolls, clayey-skeletal, montmorillonitic
*Positions on landscape:* The lower, north-facing side slopes of mountains
*Distinctive present vegetation:* Low sagebrush, bluegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Packer Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Layview Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Hapgood Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses**

**Packer Soil**
*Range seeding:* Poor—small stones
*Roadfill:* Poor—slope
*Topsoil:* Poor—small stones, area reclaim, slope
*Daily cover for landfill:* Poor—small stones, slope
*Shallow excavations:* Severe—slope
*Local roads and streets:* Severe—slope
*Pond reservoir areas:* Severe—seepage, slope
*Embankments, dikes, and levees:* Severe—seepage, large stones
*Sand:* Improbable source—excess fines, large stones
*Gravel:* Improbable source—excess fines, large stones

**Layview Soil**
*Range seeding:* Poor—droughty, small stones
*Roadfill:* Poor—depth to rock
*Topsoil:* Poor—depth to rock, small stones
*Daily cover for landfill:* Poor—depth to rock, small stones
*Shallow excavations:* Severe—depth to rock
*Local roads and streets:* Severe—depth to rock
*Pond reservoir areas:* Severe—depth to rock, slope
*Embankments, dikes, and levees:* Severe—thin layer
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Hapgood Soil**
*Range seeding:* Poor—erodes easily
*Roadfill:* Poor—slope
*Topsoil:* Poor—small stones, area reclaim, slope
*Daily cover for landfill:* Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Packer and Layview soils—VIIa, nonirrigated; Hapgood soil—VIIe, nonirrigated
Range site: Packer and Layview soils—024X016N;
Hapgood soil—024X023N; Inclusion 1—028B024N;
Inclusion 2—none; Inclusion 3—025X061N;
Inclusion 4—024X018N

3094—Packer-Hapgood-Torro association
Positions on landscape: Mountains

Composition

Major components:
Packer extremely gravelly sandy loam, 30 to 75 percent slopes—40 percent
Hapgood gravelly loam, 30 to 50 percent slopes—25 percent
Torro very gravelly loam, 5 to 75 percent slopes—20 percent
Contrasting inclusions:
Newlands extremely gravelly sandy loam, 30 to 50 percent slopes—7 percent
Layview extremely gravelly sandy loam, 30 to 50 percent slopes—3 percent
Rock outcrop—3 percent
Rubble land—2 percent

Characteristics of the Packer Soil

Classification: Argic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: The highest side slopes of mountains
Parent material: Mixed residuum that includes loess and volcanic ash
Slope: 30 to 75 percent
Elevation: 8,700 to 9,400 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 42 degrees F
Slopes are high

Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

Typical Profile

Rock fragments on surface: 10 percent cobbles, 60 percent pebbles
Depth: 0 to 10 inches

Characteristics of the Hapgood Soil

Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: North-facing, concave side slopes of mountains
Parent material: Colluvium that includes loess and volcanic ash
Slope: 30 to 50 percent
Elevation: 8,400 to 9,400 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days

Dominant present vegetation: Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
**Lander County, Nevada, South Part**

**Reaction:** Neutral  
**Depth:** 17 to 40 inches  
**Texture:** Very gravelly loam  
**Structure:** Subangular blocky  
**Consistency:** Slightly hard, very friable  
**Reaction:** Neutral  
**Depth:** 40 to 60 inches  
**Texture:** Very cobbly loam, very gravelly loam  
**Structure:** Massive  
**Consistency:** Soft, very friable  
**Reaction:** Neutral

**Soil and Water Features**  
**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Moderate  
**Available water capacity:** 5.8 to 7.4 inches  
**Water-supplying capacity:** 16 inches  
**Runoff:** Rapid  
**Hydrologic group:** B  
**Erosion factors (upper layer):** K value—0.24; T value—5; wind erodibility group—6  
**Hazard of erosion:** By water—severe; by wind—slight  
**Shrink-swell potential:** Low  
**Corrosivity:** To steel—moderate; to concrete—low  
**Potential for frost action:** Moderate

**Characteristics of the Torro Soil**  
**Classification:** Aridic Argixerolls, loamy-skeletal, mixed, frigid  
**Positions on landscape:** The lower, south- and west-facing side slopes of mountains  
**Parent material:** Colluvium and residuum derived from chert and shale  
**Slope:** 50 to 75 percent  
**Elevation:** 7,700 to 8,800 feet  
**Average annual precipitation:** About 14 inches  
**Average annual air temperature:** About 42 degrees F  
**Frost-free season:** About 80 days  
**Dominant present vegetation:** Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

**Typical Profile**  
**Rock fragments on surface:** 20 percent cobbles, 45 percent pebbles  
**Depth:** 0 to 10 inches  
**Texture:** Very gravelly loam  
**Structure:** Platy  
**Consistency:** Soft, very friable  
**Reaction:** Neutral  
**Depth:** 10 to 34 inches  
**Texture:** Extremely gravelly loam, extremely gravelly clay loam  
**Structure:** Angular blocky  
**Consistency:** Hard, friable  
**Reaction:** Neutral  
**Depth:** 34 to 60 inches  
**Texture:** Extremely gravelly sandy loam, extremely gravelly loamy coarse sand  
**Structure:** Massive  
**Consistency:** Slightly hard, very friable  
**Reaction:** Neutral

**Soil and Water Features**  
**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Moderate  
**Available water capacity:** 5.5 to 7.0 inches  
**Water-supplying capacity:** 12 inches  
**Runoff:** Rapid  
**Hydrologic group:** B  
**Erosion factors (upper layer):** K value—0.15; T value—5; wind erodibility group—7  
**Hazard of erosion:** By water—severe; by wind—slight  
**Shrink-swell potential:** Low  
**Corrosivity:** To steel—moderate; to concrete—low  
**Potential for frost action:** Moderate

**Contrasting Inclusions**

**Inclusion 1**  
**Classification:** Argic Cryoborolls, fine-loamy, mixed  
**Positions on landscape:** The lower, north-facing side slopes of mountains  
**Distinctive present vegetation:** Snowberry, serviceberry

**Inclusion 2**  
**Classification:** Argic Lithic Cryoborolls, loamy-skeletal, mixed  
**Positions on landscape:** Crests of mountains  
**Distinctive present vegetation:** Low sagebrush, black sagebrush, bluegrass

**Inclusion 3**  
**Positions on landscape:** Scattered peaks and severely eroded side slopes of mountains  
**Distinctive present vegetation:** None

**Inclusion 4**  
**Positions on landscape:** Side slopes of mountains  
**Distinctive present vegetation:** None

**Major Current Uses**  
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Packer Soil**  
**Wild herbaceous plants (nonirrigated):** Fair  
**Shrubs (nonirrigated):** Fair
Hapgood Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Torro Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Packer Soil
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Hapgood Soil
Range seeding: Poor—erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Torro Soil
Range seeding: Poor—small stones, erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Packer and Torro soils—
VIIa, nonirrigated; Hapgood soil—VIIb, nonirrigated
Range site: Packer soil—024X016N; Hapgood soil—
024X032N; Torro soil—024X029N; Inclusion 1—
028B029N; Inclusion 2—024X016N; Inclusions 3
and 4—none

3101—Hackwood-Newlands-Hapgood association
Positions on landscape: Mountains

Composition
Major components:
Hackwood gravelly loam, 15 to 30 percent slopes, rubbly—75 percent
Newlands extremely bouldery loam, 8 to 15 percent
slopes—10 percent
Hapgood gravelly loam, 15 to 30 percent slopes—10
percent
Contrasting inclusions:
Entic Cryembrepts, loamy-skeletal, mixed, 8 to 15
percent slopes—2 percent
Packer very gravelly loam, 8 to 15 percent slopes—2
percent
Rock outcrop—1 percent

Characteristics of the Hackwood Soil
Classification: Pachic Cryoborolls, fine-loamy, mixed
Positions on landscape: Concave side slopes of
mountains below ridges and areas of Rock outcrop
Parent material: Colluvium derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 7,800 to 9,500 feet
Average annual precipitation: About 18 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 40 days
Dominant present vegetation: Quaking aspen

Typical Profile
Rock fragments on surface: 25 percent stones and
boulders
Depth: 0 to 18 inches
Texture: Gravelly loam
Structure: Granular
Consistency: Slightly hard, very friable
Reaction: Slightly acid

Depth: 18 to 32 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Slightly acid

Depth: 32 to 60 inches
Texture: Very gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Slightly acid

Soil and Water Features
Depth to a seasonal high water table: More than 60
inches
Frequency of flooding: None
Lander County, Nevada, South Part

Permeability: Moderate
Available water capacity: 6 to 8 inches
Water-supplying capacity: 18 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Newlands Soil**

Classification: Argic Cryoborolls, fine-loamy, mixed
Positions on landscape: Slightly convex side slopes of mountains
Parent material: Colluvium and residuum derived from andesite and rhyolite
Slope: 8 to 15 percent
Elevation: 7,800 to 9,500 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Mountain brome, needlegrass, mountain big sagebrush

**Typical Profile**

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 17 to 40 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 40 to 60 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Neutral

**Soil and Water Features**

Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 6.0 to 7.4 inches
Water-supplying capacity: 16 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate
Contrasting Inclusions

Inclusion 1
Classification: Entic Cryombrepts, loamy-skeletal, mixed
Positions on landscape: Concave areas of basins
Distinctive present vegetation: Needlegrass, balsamroot

Inclusion 2
Classification: Argic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Windswept crests of mountains
Distinctive present vegetation: Low sagebrush, Idaho fescue, balsamroot

Inclusion 3
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Hackwood Soil
Wild herbaceous plants (nonirrigated): Good
Shrubs (nonirrigated): Good

Newlands Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Hapgood Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Hackwood Soil
Range seeding: Poor—large stones
Roadfill: Fair—shrink-swell, slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Newlands Soil
Range seeding: Poor—large stones
Roadfill: Fair—depth to rock, thin layer
Topsoil: Poor—small stones, depth to rock
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—depth to rock, slope
Local roads and streets: Moderate—slope, shrink-swell, frost action
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer, large stones

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Hapgood Soil
Range seeding: Fair—erodes easily, small stones
Roadfill: Fair—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Hackwood and Newlands soils—VIIIs, nonirrigated; Hapgood soil—Vle, nonirrigated
Range site: Hackwood soil—025X065N; Newlands soil—028B029N; Hapgood soil—024X032N; Inclusion 1—025X028N; Inclusion 2—024X016N; Inclusion 3—none

3111—Ninemile-Zoesta-Itca association
Positions on landscape: Mountains

Composition

Major components:
Ninemile extremely cobbly loam, 15 to 30 percent slopes—55 percent
Zoesta cobbly loam, 8 to 15 percent slopes—15 percent
Itca extremely stony loam, 15 to 30 percent slopes—15 percent

Contrasting inclusions:
Rock outcrop—10 percent
Aridic Argixerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—3 percent
Punchbowl very gravelly loam, 8 to 15 percent slopes—2 percent

Characteristics of the Ninemile Soil
Classification: Lithic Argixerolls, clayey, montmorillonitic, frigid
Positions on landscape: Convex side slopes of mountains
Parent material: Residuum derived from andesite, basalt, and tuff
Slope: 15 to 30 percent
Elevation: 6,800 to 7,400 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Low sagebrush, bluegrass, needlegrass, Idaho fescue, singleleaf pinyon

**Typical Profile**

Rock fragments on surface: 10 percent stones and boulders, 40 percent cobbles, 25 percent pebbles

Depth: 0 to 9 inches

Texture: Extremely cobbly loam

Structure: Granular

Consistency: Slightly hard, friable

Reaction: Neutral

Depth: 9 to 19 inches

Texture: Clay, gravelly clay

Structure: Prismatic

Consistency: Hard, firm

Reaction: Neutral

Depth: 19 inches

Kind of material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 10 to 20 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Very slow

Available water capacity: 2 to 3 inches

Water-supplying capacity: 10 inches

Runoff: Rapid

Hydrologic group: D

Erosion factors (upper layer): K value—0.05; T value—1; wind erodibility group—8

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: High

Corrosivity: To steel—moderate; to concrete—low

Potential for frost action: Low

**Characteristics of the Zoesta Soil**

Classification: Xerollic Paleargids, fine, montmorillonitic, frigid

Positions on landscape: Side slopes of mountains

Parent material: Alluvium and colluvium derived from various kinds of rock

Slope: 8 to 15 percent

Elevation: 6,800 to 7,400 feet

Average annual precipitation: About 10 inches

Average annual air temperature: About 45 degrees F

Frost-free season: About 100 days

Dominant present vegetation: Bluebunch wheatgrass, needlegrass, low sagebrush

Texture: Cobbly loam

Structure: Platy

Consistency: Slightly hard, very friable

Reaction: Neutral

Depth: 7 to 23 inches

Texture: Clay

Structure: Prismatic

Consistency: Very hard, very firm

Reaction: Mildly alkaline

Depth: 23 to 31 inches

Texture: Gravelly clay, gravelly clay loam

Structure: Prismatic

Consistency: Very hard, very firm

Reaction: Moderately alkaline

Depth: 31 to 60 inches

Texture: Very gravelly loam, very gravelly clay loam

Structure: Massive

Consistency: Very hard, very firm

Reaction: Moderately alkaline

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Very slow

Available water capacity: 8 to 11 inches

Water-supplying capacity: 12 inches

Runoff: Rapid

Hydrologic group: D

Erosion factors (upper layer): K value—0.20; T value—1; wind erodibility group—6

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: High

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Low

**Characteristics of the Itca Soil**

Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

Positions on landscape: Crests and side slopes of mountains near areas of Rock outcrop

Parent material: Residueum derived from extrusive volcanic and pyroclastic rock

Slope: 15 to 30 percent

Elevation: 6,800 to 7,400 feet

Average annual precipitation: About 14 inches

Average annual air temperature: About 43 degrees F

Frost-free season: About 80 days

Dominant present vegetation: Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

Site index for singleleaf pinyon: 70
Typical Profile

Rock fragments on surface: 15 percent stones and boulders, 10 percent cobbles, 20 percent pebbles

Depth: 0 to 9 inches
Texture: Extremely stony loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 9 to 17 inches
Texture: Very cobbly clay, very gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline

Depth: 17 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.5 to 2.5 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Positions on landscape: Scattered peaks, rims, escarpments
Distinctive present vegetation: None

Inclusion 2
Classification: Argic Argixerolls, fine-loamy, mixed, frigid
Positions on landscape: Drainageways
Distinctive present vegetation: Basin big sagebrush, basin willye

Inclusion 3
Classification: Lithic Xerollic Haplorgids, loamy, mixed, frigid
Positions on landscape: Low crests and shoulder slopes of mountains
Distinctive present vegetation: Black sagebrush, bottlebrush squirreltail

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Ninemile Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Zoesta Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Ninemile Soil
Range seeding: Poor—droughty, large stones, rooting depth
Roadfill: Poor—depth to rock, low strength
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, too clayey, hard to pack
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, low strength, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Zoesta Soil
Range seeding: Poor—rooting depth
Roadfill: Fair—shrink-swell
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Itca Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones, too clayey
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

**Interpretive Groups**

*Land capability classification:* Ninemile and Itca soils—VII.s. nonirrigated; Zoesta soil—IVs., irrigated, and VII.s. nonirrigated

*Range site:* Nine mile soil—02B8037N; Zoesta soil—02B8045N; Itca soil—02B025X061N; Inclusion 1—none; Inclusion 2—02B8003N; Inclusion 3—02B8016N

**3120—Walti-Softscrabble-Chad association**

*Positions on landscape:* Mountains

**Composition**

*Major components:*
Walti very cobbly loam, 30 to 50 percent slopes—40 percent
Softscrabble very cobbly fine sandy loam, 30 to 50 percent slopes—25 percent
Chad cobbly loam, 30 to 50 percent slopes—20 percent
Contrasting inclusions:
Cleavage very cobbly loam, 15 to 50 percent slopes—7 percent
Rock outcrop—6 percent
Rubble land—2 percent

**Characteristics of the Walti Soil**

*Classification:* Aridic Argyixerolls, fine, montmorillonitic, frigid
*Positions on landscape:* Convex side slopes of mountains
*Parent material:* Colluvium and residuum derived from rhyolite, andesite, and tuff
*Slope:* 30 to 50 percent
*Elevation:* 6,400 to 8,200 feet
*Average annual precipitation:* About 14 inches
*Average annual air temperature:* About 44 degrees F
*Frost-free season:* About 80 days
*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

**Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles
*Depth:* 0 to 4 inches
*Texture:* Very cobbly loam
*Structure:* Platy
*Consistence:* Soft, very friable
*Reaction:* Neutral
*Depth:* 4 to 10 inches
*Texture:* Clay loam, gravelly clay loam
*Structure:* Subangular blocky
*Consistence:* Hard, friable
*Reaction:* Neutral

**Depth:** 10 to 30 inches
*Texture:* Clay

*Structure:* Prismatic
*Consistence:* Very hard, firm
*Reaction:* Neutral
*Depth:* 30 inches
*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 20 to 30 inches
*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Very slow
*Available water capacity:* 2.0 to 3.5 inches
*Water-supplying capacity:* 12 inches
*Runoff:* Rapid
*Hydrologic group:* D
*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—8
*Hazard of erosion:* By water—slight; by wind—slight
*Shrink-swell potential:* High
*Corrosivity:* To steel—moderate; to concrete—low
*Potential for frost action:* Low

**Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid
*Positions on landscape:* Concave, north-facing side slopes of mountains
*Parent material:* Colluvium and residuum derived from volcanic rock
*Slope:* 30 to 50 percent
*Elevation:* 6,400 to 8,200 feet
*Average annual precipitation:* About 16 inches
*Average annual air temperature:* About 44 degrees F
*Frost-free season:* About 70 days
*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

**Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 25 percent pebbles
*Depth:* 0 to 16 inches
*Texture:* Very cobbly fine sandy loam
*Structure:* Subangular blocky
*Consistence:* Slightly hard, very friable
*Reaction:* Neutral
*Depth:* 16 to 30 inches
*Texture:* Very cobbly clay loam
*Structure:* Angular blocky
*Consistence:* Hard, friable
*Reaction:* Neutral
Depth: 30 to 60 inches
Texture: Very gravelly clay loam

Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6 to 8 inches
Water-supplying capacity: 15 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.15; T value—5;
wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Chad Soil**

Classification: Aridic Argixerolls, fine, mixed, frigid
Positions on landscape: South-facing side slopes of mountains
Parent material: Residuum derived from chert and shale
Slope: 30 to 50 percent
Elevation: 6,400 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, Thuber needlegrass, mountain big sagebrush

**Typical Profile**

Rock fragments on surface: 20 percent cobbles, 10 percent pebbles
Depth: 0 to 11 inches
Texture: Cobbly loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Neutral
Depth: 11 to 43 inches
Texture: Gravely clay, clay
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 43 inches
Texture: Weathered bedrock

**Soil and Water Features**

Depth to bedrock: 40 to 60 inches

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.5 to 7.0 inches
Water-supplying capacity: 13 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.28; T value—3;
wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

**Contrasting Inclusions**

Inclusion 1
Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Convex crests and shoulder slopes of mountains
Distinctive present vegetation: Low sagebrush, black sagebrush

Inclusion 2
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 3
Positions on landscape: Below areas of Rock outcrop
Distinctive present vegetation: None

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Walti Soil**

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Softscrabble Soil**

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Chad Soil**

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Walti Soil**

Range seeding: Poor—rooting depth, large stones
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, slope
Daily cover for landfill: Poor—depth to rock, hard to pack, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—shrink-swell, low strength, slope
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Softscrbabble Soil
Range seeding: Poor—large stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Chad Soil
Range seeding: Poor—erodes easily
Roadfill: Poor—slope, shrink-swell
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—too clayey, hard to pack, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope, shrink-swell
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Walti and Softscrabble soils—VIIa, nonirrigated; Chad soil—VIIc, nonirrigated
Range site: Walti soil—028B037N; Softscrabble soil—024X021N; Chad soil—024X029N; Inclusion 1—028B038N; Inclusions 2 and 3—none

3121—Walti-Softscrabble-Bucan association

Composition

Major components:
Walti extremely cobbly loam, 30 to 50 percent slopes—45 percent
Softscrabble very cobbly loam, 30 to 50 percent slopes—20 percent
Bucan very cobbly loam, 30 to 50 percent slopes—20 percent
Contrasting inclusions:
Cumulic Haplaquolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—6 percent
Rock outcrop—5 percent
Pachic Haploxerolls, fine-loamy, mixed, frigid, 4 to 15 percent slopes—3 percent
Cumulic Haplaquolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—1 percent

Characteristics of the Walti Soil

Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Stable crests and shoulder slopes of mountains
Parent material: Colluvium and residuum derived from rhyolite, andesite, and tuff
Slope: 30 to 50 percent
Elevation: 6,500 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

Typical Profile

Rock fragments on surface: 40 percent cobbles and stones, 20 percent pebbles
Depth: 0 to 4 inches
Texture: Extremely cobbly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral
Depth: 4 to 10 inches
Texture: Clay loam, gravelly clay loam
Structure: Subangular blocky
Consistency: Hard, friable
Reaction: Neutral
Depth: 10 to 30 inches
Texture: Clay
Structure: Prismatic
Consistency: Very hard, firm
Reaction: Neutral
Depth: 30 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.5 to 5.0 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

**Characteristics of the Softscrabble Soil**

**Classification:** Pachic Argixerolls, loamy-skeletal, mixed, frigid
**Positions on landscape:** Concave, north- and east-facing side slopes of mountains
**Parent material:** Colluvium and residuum derived from volcanic rock
**Slope:** 30 to 50 percent
**Elevation:** 6,500 to 8,000 feet
**Average annual precipitation:** About 16 inches
**Average annual air temperature:** About 44 degrees F
**Frost-free season:** About 70 days
**Dominant present vegetation:** Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

**Typical Profile**

**Rock fragments on surface:** 30 percent cobbles, 20 percent pebbles
**Depth:** 0 to 16 inches
**Texture:** Very cobbly loam
**Structure:** Subangular blocky
**Consistence:** Slightly hard, very friable
**Reaction:** Neutral
**Depth:** 16 to 30 inches
**Texture:** Very cobbly clay loam
**Structure:** Angular blocky
**Consistence:** Hard, friable
**Reaction:** Neutral
**Depth:** 30 to 60 inches
**Texture:** Very gravelly clay loam
**Structure:** Angular blocky
**Consistence:** Hard, friable
**Reaction:** Neutral

**Soil and Water Features**

**Depth to a seasonal high water table:** More than 60 inches
**Frequency of flooding:** None
**Permeability:** Slow
**Available water capacity:** 6 to 8 inches
**Water-supplying capacity:** 15 inches
**Runoff:** Rapid
**Hydrologic group:** C
**Erosion factors (upper layer):** K value—0.15; T value—5; wind erodibility group—8
**Hazard of erosion:** By water—moderate; by wind—slight
**Shrink-swell potential:** Low
**Corrosivity:** To steel—moderate; to concrete—low
**Potential for frost action:** Moderate

---

**Characteristics of the Bucan Soil**

**Classification:** Xerolic Haplargids, fine, montmorillonitic, frigid
**Positions on landscape:** West- and south-facing side slopes of mountains
**Parent material:** Loess cap that is high in content of volcanic ash over residuum and colluvium derived from volcanic rock
**Slope:** 30 to 50 percent
**Elevation:** 6,500 to 8,000 feet
**Average annual precipitation:** About 10 inches
**Average annual air temperature:** About 44 degrees F
**Frost-free season:** About 90 days
**Dominant present vegetation:** Wyoming big sagebrush, bluebunch wheatgrass, bluegrass

**Typical Profile**

**Rock fragments on surface:** 15 percent stones and boulders, 20 percent cobbles, 20 percent pebbles
**Depth:** 0 to 4 inches
**Texture:** Very cobbly loam
**Structure:** Platy
**Consistence:** Slightly hard, very friable
**Reaction:** Neutral
**Depth:** 4 to 18 inches
**Texture:** Clay
**Structure:** Prismatic
**Consistence:** Very hard, firm
**Reaction:** Mildly alkaline
**Depth:** 18 to 52 inches
**Texture:** Cobbly clay, gravelly clay, gravelly clay loam
**Structure:** Massive
**Consistence:** Hard, firm
**Reaction:** Moderately alkaline
**Depth:** 52 inches
**Kind of material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 40 to 60 inches
**Depth to a seasonal high water table:** More than 60 inches
**Frequency of flooding:** None
**Permeability:** Slow
**Available water capacity:** 8 to 10 inches
**Water-supplying capacity:** 10 inches
**Runoff:** Rapid
**Hydrologic group:** C
**Erosion factors (upper layer):** K value—0.15; T value—3; wind erodibility group—8
**Hazard of erosion:** By water—moderate; by wind—slight
**Shrink-swell potential:** High
**Corrosivity:** To steel—high; to concrete—low
**Potential for frost action:** Moderate
Contrasting Inclusions

Inclusion 1
Classification: Cumulic Haplauquolls, fine-loamy, mixed, frigid
Positions on landscape: Canyon bottoms, near seeps
Distinctive present vegetation: Willow, sedge, chokecherry

Inclusion 2
Positions on landscape: Rims
Distinctive present vegetation: None

Inclusion 3
Classification: Pachic Haploxerolls, fine-loamy, mixed, frigid
Positions on landscape: Concave, sheltered side slopes of mountains
Distinctive present vegetation: Aspen

Inclusion 4
Classification: Cumulic Haplauquolls, fine-loamy, mixed, frigid
Positions on landscape: Seeps, springs
Distinctive present vegetation: Tufted hairgrass, Nevada bluegrass

Minor Inclusion
Positions on landscape: Below areas of Rock outcrop
Distinctive present vegetation: None

Suitability for Wildlife Habitat Elements

Walti Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Softscrabble Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Bucan Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Walti Soil
Range seeding: Poor—rooting depth, large stones
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, slope
Daily cover for landfill: Poor—depth to rock, hard to pack, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—shrink-swell, low strength, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Softscrabble Soil
Range seeding: Poor—large stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Bucan Soil
Range seeding: Poor—large stones, rooting depth
Roadfill: Poor—shrink-swell, low strength, slope
Topsoil: Poor—too clayey, area reclaim, small stones
Daily cover for landfill: Poor—large stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—shrink-swell, low strength, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Walti, Softscrabble, and Bucan soils—VII, nonirrigated
Range site: Walti soil—024X027N; Softscrabble soil—024X021N; Bucan soil—024X028N; Inclusion 1—028B024N; Inclusion 2—none; Inclusion 3—025X065N; Inclusion 4—025X005N

3122—Walti-Sumine-Softscrabble association

Positions on landscape: Mountains

Composition

Major components:
Walti gravelly loam, 30 to 50 percent slopes—35 percent
Sumine cobbly loam, 30 to 50 percent slopes—30 percent
Softscrabble cobbly loam, 30 to 50 percent slopes—20 percent

Contrasting inclusions:
Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid, 4 to 30 percent slopes—6 percent
Rock outcrop—5 percent
Cumulic Haploxerolls, fine-loamy, mixed, frigid, 4 to 15 percent slopes—2 percent
Rubble land—2 percent
**Characteristics of the Walti Soil**

*Classification:* Aridic Argixerolls, fine, montmorillonitic, frigid
*Positions on landscape:* Convex, stable side slopes of mountains
*Parent material:* Colluvium and residuum derived from volcanic rock
*Slope:* 30 to 50 percent
*Elevation:* 6,500 to 8,200 feet
*Average annual precipitation:* About 14 inches
*Average annual air temperature:* About 44 degrees F
*Frost-free season:* About 80 days
*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, low sagebrush

**Typical Profile**

*Rock fragments on surface:* 20 percent pebbles
*Depth:* 0 to 4 inches
*Texture:* Gravely loam
*Structure:* Platy
*Consistency:* Soft, very friable
*Reaction:* Neutral
*Depth:* 4 to 10 inches
*Texture:* Clay loam, gravelly clay loam
*Structure:* Subangular blocky
*Consistency:* Hard, friable
*Reaction:* Neutral
*Depth:* 10 to 30 inches
*Texture:* Clay
*Structure:* Prismatic
*Consistency:* Very hard, firm
*Reaction:* Neutral
*Depth:* 30 inches
*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 20 to 30 inches
*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Very slow
*Available water capacity:* 3.5 to 4.7 inches
*Water-supplying capacity:* 12 inches
*Runoff:* Rapid
*Hydrologic group:* D
*Erosion factors (upper layer):* K value—0.28; T value—2; wind erodibility group—6
*Hazard of erosion:* By water—severe; by wind—slight
*Shrink-swell potential:* High
*Corrosivity:* To steel—moderate; to concrete—low
*Potential for frost action:* Low

**Characteristics of the Sumine Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid
*Positions on landscape:* South-facing side slopes of mountains
*Parent material:* Colluvium and residuum derived from quartzite and sandstone
*Slope:* 30 to 50 percent
*Elevation:* 6,500 to 8,200 feet
*Average annual precipitation:* About 12 inches
*Average annual air temperature:* About 44 degrees F
*Frost-free season:* About 90 days
*Dominant present vegetation:* Bluebunch wheatgrass, mountain big sagebrush

**Typical Profile**

*Rock fragments on surface:* 20 percent cobbles, 10 percent pebbles
*Depth:* 0 to 10 inches
*Texture:* Cobbly loam
*Structure:* Platy
*Consistency:* Soft, friable
*Reaction:* Neutral
*Depth:* 10 to 30 inches
*Texture:* Very cobbly clay loam, very gravelly clay loam, very gravelly loam
*Structure:* Angular blocky
*Consistency:* Hard, firm
*Reaction:* Mildly alkaline
*Depth:* 30 inches
*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches
*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderate
*Available water capacity:* 3.0 to 4.5 inches
*Water-supplying capacity:* 12 inches
*Runoff:* Rapid
*Hydrologic group:* C
*Erosion factors (upper layer):* K value—0.24; T value—2; wind erodibility group—6
*Hazard of erosion:* By water—severe; by wind—slight
*Shrink-swell potential:* Low
*Corrosivity:* To steel—moderate; to concrete—low
*Potential for frost action:* Moderate

**Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid
*Positions on landscape:* Concave, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 30 to 50 percent
Elevation: 6,500 to 8,200 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

Typical Profile
Rock fragments on surface: 20 percent cobbles, 10 percent pebbles
Depth: 0 to 16 inches
Texture: Cobbly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 16 to 30 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral
Depth: 30 to 60 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6 to 8 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.17; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Lithic Xerolic Haplargids, loamy-skeletal, mixed, frigid
Positions on landscape: Windswept crests of mountains
Distinctive present vegetation: Black sagebrush, low sagebrush, Idaho fescue

Inclusion 2
Positions on landscape: Rims, cliffs
Distinctive present vegetation: None

Inclusion 3
Classification: Cumulic Haploxerolls, fine-loamy, mixed, frigid
Positions on landscape: Narrow mountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 4
Positions on landscape: Side slopes of mountains
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Walti Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Sumine Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Softscrabble Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Walti Soil
Range seeding: Poor—rooting depth, erodes easily
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, slope
Daily cover for landfill: Poor—depth to rock, hard to pack, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—shrink-swell, low strength, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Sumine Soil
Range seeding: Poor—erodes easily
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Softscrabble Soil
Range seeding: Fair—large stones, erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Walti soil—VIIe, nonirrigated; Sumine and Softscrabble soils—VIIIs, nonirrigated
Range site: Walti soil—024X027N; Sumine soil—024X029N; Softscrabble soil—024X021N; Inclusion 1—024X016N; Inclusion 2—none; Inclusion 3—028B024N; Inclusion 4—none

3123—Walti-Softscrabble-ltca association
Positions on landscape: Mountains

Composition
Major components:
Walti very cobbly loam, 8 to 15 percent slopes—35 percent
Softscrabble very gravelly loam, 15 to 30 percent slopes—30 percent
Ltca extremely stony loam, 15 to 30 percent slopes—20 percent
Contrasting inclusions:
Cumulus Haploxerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—5 percent
Aridic Argixerolls, clayey-skeletal, montmorrillonitic, frigid, 15 to 30 percent slopes—5 percent
Lithic Xerolic Haplorgids, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—5 percent

Characteristics of the Walti Soil
Classification: Aridic Argixerolls, fine, montmorrillonitic, frigid
Positions on landscape: Crests and shoulder slopes of mountains
Parent material: Colluvium and residuum derived from rhyolite, andesite, and tuff
Slope: 8 to 15 percent
Elevation: 7,000 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

Typical Profile
Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 4 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 4 to 10 inches
Texture: Clay loam, gravelly clay loam
Structure: Subangular blocky
Consistence: Hard, firm
Reaction: Neutral
Depth: 30 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3 to 5 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Softscrabble Soil
Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave side slopes of mountains
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 7,000 to 8,200 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry
Typical Profile

Rock fragments on surface: 10 percent cobbles, 45 percent pebbles

Depth: 0 to 16 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 16 to 30 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Depth: 30 to 60 inches
Texture: Gravely clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 7.2 to 8.7 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—5;
wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Itca Soil

Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex side slopes of mountains
Parent material: Residuum derived from extrusive volcanic and pyroclastic rock
Slope: 15 to 30 percent
Elevation: 7,000 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush
Site index for singleleaf pinyon: 70

Typical Profile

Rock fragments on surface: 10 percent stones and boulders, 15 percent cobbles, 30 percent pebbles

Depth: 0 to 2 inches
Texture: Extremely stony loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 2 to 14 inches
Texture: Very cobbly clay, very gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline

Depth: 14 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.8 to 3 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: 28 Moderate

Contrasting Inclusions

Inclusion 1
Classification: Cumulic Haploxerolls, fine-loamy, mixed, frigid
Positions on landscape: Canyon bottoms, narrow mountain drainageways
Distinctive present vegetation: Chokecherry

Inclusion 2
Classification: Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: South-facing side slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, mountain big sagebrush

Inclusion 3
Classification: Lithic Xerolic Haplargids, loamy-skeletal, mixed, frigid
Positions on landscape: Convex, windswepft crests of mountains near areas of Rock outcrop
Distinctive present vegetation: Low sagebrush, black sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Walti Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Softscrabble Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Itca Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Walti Soil
Range seeding: Poor—rooting depth, large stones
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones
Daily cover for landfills: Poor—depth to rock, hard to pack
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Softscrabble Soil
Range seeding: Poor—small stones
Roadfill: Fair—large stones, slope, shrink-swell
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfills: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Itca Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfills: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope

Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Interpretive Groups

Land capability classification: Walti, Softscrabble, and Itca soils—VIIa, nonirrigated
Range site: Walti soil—024X027N; Softscrabble soil—024X021N; Itca soil—025X061N; Inclusion 1—028B025N; Inclusion 2—024X029N; Inclusion 3—024X016N

3125—Walti-Softscrabble-Robson association

Positions on landscape: Mountains

Composition

Major components:
Walti very cobbly loam, 15 to 30 percent slopes—50 percent
Softscrabble very cobbly fine sandy loam, 15 to 30 percent slopes—20 percent
Robson very cobbly loam, 8 to 15 percent slopes—15 percent
Contrasting inclusions:
Welch loam, drained, 2 to 8 percent slopes—5 percent
Cleavage very cobbly loam, 8 to 30 percent slopes—5 percent
Rock outcrop—3 percent
Rubble land—2 percent

Characteristics of the Walti Soil

Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: The intermediate and upper side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolite, andesite, and tuff
Slope: 15 to 30 percent
Elevation: 6,000 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

Typical Profile

Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 4 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 4 to 10 inches
Texture: Clay loam, gravelly clay loam
Structure: Subangular blocky
Consistence: Hard, friable
Reaction: Neutral
Depth: 10 to 30 inches
Texture: Clay
Structure: Prismatic
Consistence: Very hard, firm
Reaction: Neutral
Depth: 30 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 4.0 to 5.5 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Softscrabble Soil
Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: North-facing side slopes of mountains
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 6,000 to 7,500 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

Typical Profile
Rock fragments on surface: 25 percent cobbles, 25 percent pebbles
Depth: 0 to 16 inches
Texture: Very cobbly fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 16 to 30 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral
Depth: 30 to 60 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.0 to 7.5 inches
Water-supplying capacity: 15 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.15; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Robson Soil
Classification: Lithic Xerolic Haplughids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex, lower side slopes of mountains
Parent material: Residuum derived from siliceous tuff, rhyolite, and andesite
Slope: 8 to 15 percent
Elevation: 6,000 to 7,300 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Low sagebrush, Sandberg bluegrass

Typical Profile
Rock fragments on surface: 25 percent cobbles, 20 percent pebbles
Depth: 0 to 2 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Salinity: 0 to 1 millimho per centimeter
Depth: 2 to 5 inches
Suitability for Wildlife Habitat Elements

**Walti Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Softscrabble Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Robson Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

**Walti Soil**
Range seeding: Poor—rooting depth, large stones
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, slope
Daily cover for landfill: Poor—depth to rock, hard to pack, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—shrink-swell, low strength, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Softscrabble Soil**
Range seeding: Poor—large stones
Roadfill: Fair—large stones, slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Robson Soil**
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, large stones
Shallow excavations: Severe—depth to rock, large stones
Local roads and streets: Severe—depth to rock, large stones
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Interpretive Groups
Land capability classification: Walti, Softscrabble, and Robson soils—VIIa, nonirrigated
Range site: Walti soil—028B037N; Softscramble soil—
024X021N; Robson soil—028B045N; Inclusion 1—
028B024N; Inclusion 2—028B038N; Inclusions 3
and 4—none

3130—Itca-Clan Alpine Reluctan association

Positions on landscape: Mountains

Composition

Major components:
Itca very gravelly loam, 15 to 30 percent slopes—35
percent
Clan Alpine very gravelly loam, 30 to 50 percent
slopes—35 percent
Reluctan very cobbly loam, 30 to 50 percent slopes—15
percent

Contrasting inclusions:
Xerolitic Palaeogids, fine, montmorillonitic, frigid, 8 to 30
percent slopes—8 percent
Cumulitic Haploxerolls, fine-loamy, mixed, frigid, 2 to 8
percent slopes—3 percent
Lithic Xerolitic Haplargids, loamy-skeletal, mixed, frigid,
15 to 30 percent slopes—2 percent
Rock outcrop—2 percent

Characteristics of the Itca Soil

Classification: Lithic Argixerolls, clayey-skeletal,
montmorillonitic, frigid
Positions on landscape: Convex crests of mountains
Parent material: Residueum derived from extrusive
volcanic and pyroclastic rock
Slope: 15 to 30 percent
Elevation: 6,400 to 7,300 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass,
singleleaf pinyon, Utah juniper, mountain big
sagebrush

Site index for singleleaf pinyon: 70

Typical Profile

Rock fragments on surface: 10 percent cobbles, 40
percent pebbles
Depth: 0 to 9 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 9 to 17 inches
Texture: Very gravelly clay, very gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm

Reaction: Mildly alkaline
Depth: 17 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60
inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.5 to 2.2 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Clan Alpine Soil

Classification: Typic Argixerolls, loamy-skeletal, mixed,
frigid
Positions on landscape: Concave side slopes of
mountains
Parent material: Colluvium and residuum derived from
rhyolitic and andesitic tuff
Slope: 30 to 50 percent
Elevation: 6,400 to 7,300 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Singleleaf pinyon,
mountain big sagebrush, bluebunch wheatgrass,
Utah juniper
Site index for singleleaf pinyon: 75

Typical Profile

Rock fragments on surface: 5 percent stones and
boulders, 40 percent cobbles, 20 percent pebbles

Depth: 0 to 10 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 10 to 39 inches
Texture: Very gravelly clay loam, very cobbly loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Mildly alkaline

Depth: 39 inches
Texture: Weathered bedrock
Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5.2 to 6.5 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink–swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Reluctan Soil
Classification: Aridic Argixerolls, fine-loamy, mixed, frigid
Positions on landscape: Slightly convex, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic rock
Slope: 30 to 50 percent
Elevation: 6,400 to 7,300 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

Typical Profile
Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 9 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Neutral
Depth: 9 to 27 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 27 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.6 to 5.0 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink–swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Xerollic Paleargids, fine, montmorillonitic, frigid
Positions on landscape: Foot slopes of mountains
Distinctive present vegetation: Low sagebrush, Idaho fescue, rabbitbrush

Inclusion 2
Classification: Cumulic Haploxerolls, fine-loamy, mixed, frigid
Positions on landscape: Canyon bottoms, narrow mountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 3
Classification: Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid
Positions on landscape: South-facing, lower crests of mountains
Distinctive present vegetation: Black sagebrush, rabbitbrush

Inclusion 4
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Major Uses
Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Cordwood production

Suitability for Wildlife Habitat Elements
Itca Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Clan Alpine Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Reluctan Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Suitability and Limitations for Selected Uses

Itca Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Clanpine Soil
Range seeding: Poor—small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Reluctan Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Itca, Clanpine, and Reluctan soils—VIIa, nonirrigated
Range site: Itca and Clanpine soils—025X061N;
Reluctan soil—024X021N; Inclusion 1—024X018N;
Inclusion 2—028B024N; Inclusion 3—024X031N

Composition
Major components:
Itca extremely stony loam, 50 to 75 percent slopes—50 percent
Ninemile extremely cobbly loam, 15 to 30 percent slopes—20 percent
Rock outcrop—15 percent
Contrasting inclusions:
Aridic Argixerolls, fine, montmorillonitic, frigid, 8 to 15 percent slopes—8 percent
Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid, 30 to 50 percent slopes—5 percent
Pachic Argixerolls, fine, montmorillonitic, frigid, 2 to 8 percent slopes—2 percent

Characteristics of the Itca Soil
Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Concave, upper side slopes of mountains
Parent material: Residuum derived from extrusive volcanic and pyroclastic rock
Slope: 50 to 75 percent
Elevation: 6,800 to 7,900 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush
Site index for singleleaf pinyon: 70

Typical Profile
Rock fragments on surface: 25 percent stones and boulders, 35 percent cobbles, 20 percent pebbles
Depth: 0 to 9 inches
Texture: Extremely stony loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 9 to 17 inches
Texture: Very cobbly clay, very gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 17 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.8 to 2.7 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1;
wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Ninemile Soil
Classification: Lithic Argixerolls, clayey, montmorillonitic, frigid
Positions on landscape: The lower side slopes of mountains
Parent material: Residueum derived from andesite, basalt, and tuff
Slope: 15 to 30 percent
Elevation: 6,800 to 7,800 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Low sagebrush, bluegrass, needlegrass, Idaho fescue, singleleaf pinyon

Typical Profile
Rock fragments on surface: 10 percent stones and boulders, 40 percent cobbles, 25 percent pebbles
Depth: 0 to 2 inches
Texture: Extremely cobbly loam
Structure: Granular
Consistence: Slightly hard, friable
Reaction: Neutral
Depth: 2 to 14 inches
Texture: Clay, gravelly clay
Structure: Prismatic
Consistence: Hard, firm
Reaction: Neutral
Depth: 14 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 1.8 to 2.5 inches
Water-supplying capacity: 10 inches
Runoff: Rapid

Hydrologic group: D
Erosion factors (upper layer): K value—0.05; T value—1;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Rock Outcrop
Positions on landscape: Shoulder slopes of mountains
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Concave crests of mountains
Distinctive present vegetation: Low sagebrush, black sagebrush

Inclusion 2
Classification: Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: South-facing side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, bluebunch wheatgrass

Inclusion 3
Classification: Pachic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Foot slopes of intermountain drainageways
Distinctive present vegetation: Basin big sagebrush

Major Uses
Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Wood products

Suitability for Wildlife Habitat Elements

Itca Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Ninemile Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Itca Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones, too clayey
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Ninemile Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, low strength
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, too clayey, hard to pack
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, low strength, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Itca and Ninemile soils—VIII, nonirrigated; Rock outcrop—VIII, nonirrigated
Range site: Itca soil—025X061N; Ninemile soil—028B037N; Rock outcrop—none; Inclusion 1—024X018N; Inclusion 2—028B027N; Inclusion 3—028B024N

3132—Itca-Softscrabble-Cleavage association

Positions on landscape: Mountains

Composition

Major components:
Itca extremely stony loam, 15 to 50 percent slopes—40 percent
Softscrabble cobble loam, 30 to 50 percent slopes—30 percent
Cleavage very cobbly loam, 8 to 15 percent slopes—15 percent
Contrasting inclusions:
Arctic Argixerolls, fine, montmorillonitic, frigid, 30 to 50 percent slopes—5 percent
Lithic Argixerolls, clayey, montmorillonitic, frigid, 8 to 15 percent slopes—5 percent
Rock outcrop—5 percent

Characteristics of the Itca Soil
Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

Positions on landscape: Side slopes of mountains near Rock outcrop
Parent material: Residuum derived from extrusive volcanic and pyroclastic rock
Slope: 15 to 50 percent
Elevation: 7,000 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush
Site index for singleleaf pinyon: 70

Typical Profile
Rock fragments on surface: 10 percent stones and boulders, 10 percent cobbles, 30 percent pebbles
Depth: 0 to 2 inches
Texture: Extremely stony loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 2 to 14 inches
Texture: Very cobbly clay, very gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline
Depth: 14 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.8 to 2.5 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Softscrabble Soil
Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave side slopes of mountains
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 30 to 50 percent
Elevation: 7,000 to 8,200 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

Typical Profile
Rock fragments on surface: 10 percent cobbles, 10 percent pebbles
Depth: 0 to 16 inches
Texture: Cobbly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 16 to 30 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Depth: 30 to 60 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 6 to 8 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.17; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Cleavage Soil
Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Convex crests of mountains
Parent material: Residuum derived from rhyolite and other igneous rock
Slope: 8 to 15 percent
Elevation: 7,500 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days

Dominant present vegetation: Low sagebrush, black sagebrush, Idaho fescue, bluegrass

Typical Profile
Rock fragments on surface: 10 percent cobbles, 60 percent pebbles
Depth: 0 to 4 inches
Texture: Very cobbly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral

Depth: 4 to 18 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Neutral

Depth: 18 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.8 to 2.5 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: The lower side slopes of mountains
Distinctive present vegetation: Utah juniper, singleleaf pinyon, mountain big sagebrush

Inclusion 2
Classification: Lithic Argixerolls, clayey, montmorillonitic, frigid
Positions on landscape: Concave crests of mountains
Distinctive present vegetation: Low sagebrush, Idaho fescue, bluebunch wheatgrass

Inclusion 3
Positions on landscape: Scattered peaks and cliffs
Distinctive present vegetation: None
Major Uses

Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Cordwood production

Suitability for Wildlife Habitat Elements

Itea Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Softscrabble Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Cleavage Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Itea Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones, too clayey
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Softscrabble Soil
Range seeding: Fair—large stones, erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Cleavage Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Itea, Softscrabble, and Cleavage soils—VII, nonirrigated
Range site: Itea soil—025X061N; Softscrabble soil—024X021N; Cleavage soil—024X016N; Inclusion 1—025X062N; Inclusion 2—024X027N; Inclusion 3—none

3134—Itea-Clanpine-Torro association

Positions on landscape: Mountains

Composition

Major components:
Itea extremely cobbly fine sandy loam, 15 to 30 percent slopes—35 percent
Clanpine extremely cobbly loam, 30 to 50 percent slopes—25 percent
Toro very gravelly loam, 30 to 50 percent slopes—25 percent

Contrasting inclusions:
Softscrabble gravelly loam, 15 to 50 percent slopes—5 percent
Rock outcrop—5 percent
Walti very cobbly fine sandy loam, 8 to 30 percent slopes—4 percent
Cumulic Haploxerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—1 percent

Characteristics of the Itea Soil

Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex crests, spurs, and side slopes of mountains adjacent to areas of Rock outcrop
Parent material: Residuum derived from extrusive volcanic and pyroclastic rock
Slope: 15 to 30 percent
Elevation: 7,000 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush
Site index for singleleaf pinyon: 65

Typical Profile

Rock fragments on surface: 45 percent cobbles, 30 percent pebbles
Depth: 0 to 9 inches
Texture: Extremely cobbly fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 9 to 17 inches
Texture: Very gravelly clay, very gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline

Depth: 17 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.05; T value—1;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Clan Alpine Soil

Classification: Typic Argixerolls, loamy-skeletal, mixed, frigid

Positions on landscape: North- and east-facing, convex side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic and andesitic tuff
Slope: 30 to 50 percent
Elevation: 7,000 to 8,200 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper
Site index for singleleaf pinyon: 75

Typical Profile

Rock fragments on surface: 5 percent stones and boulders, 40 percent cobbles, 20 percent pebbles

Depth: 0 to 12 inches
Texture: Extremely gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 0 to 10 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral

Depth: 10 to 38 inches
Texture: Extremely gravelly loam, extremely gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Depth: 38 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy coarse sand
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 4.5 to 5.8 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.15; T value—5; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Pacific Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave side slopes of mountains in areas where snow accumulates
Distinctive present vegetation: Snowberry, mountain big sagebrush, bluegrass

Inclusion 2
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 3
Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Stable, convex side slopes of mountains
Distinctive present vegetation: Low sagebrush, bluegrass

Inclusion 4
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Canyon bottoms, drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Minor Inclusions
Positions on landscape: Side slopes of mountains
Distinctive present vegetation: None

Major Uses

Current uses: Livestock grazing, wildlife habitat

Potential foreseeable use: Cordwood production

Suitability for Wildlife Habitat Elements

Itca Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
 Shrubs (nonirrigated): Fair

Clanalpine Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
 Shrubs (nonirrigated): Fair

Torro Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Itca Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Clanalpine Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Torro Soil
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source
Interpretive Groups

Land capability classification: Itca, Clanalpine, and Torro soils—Vlls, nonirrigated
Range site: Itca and Clanalpine soils—025X061N; Torro soil—024X029N, Inclusion 1—024X021N; Inclusion 2—none; Inclusion 3—024X027N; Inclusion 4—028B025N

3135—Itca-Clanalpine-Rock outcrop association

Positions on landscape: Mountains

Composition

Major components:
Itca stony loam, 30 to 50 percent slopes—35 percent
Clanalpine very gravelly loam, 50 to 75 percent slopes—35 percent
Rock outcrop—15 percent
Contrasting inclusions:
Cleavage cobbley loam, 15 to 30 percent slopes—7 percent
Jung very gravelly loam, 15 to 30 percent slopes—5 percent
Arctic Argixerolls, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—3 percent

Characteristics of the Itca Soil

Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Crests, shoulder slopes, and convex side slopes of mountains
Parent material: Residuum derived from extrusive volcanic and pyroclastic rock
Slope: 30 to 50 percent
Elevation: 6,500 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush
Site index for singleleaf pinyon: 70

Typical Profile

Rock fragments on surface: 0.1 percent stones and boulders, 10 percent cobbles, 30 percent pebbles
Depth: 0 to 2 inches
Texture: Stony loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 2 to 14 inches
Texture: Very cobbly clay, very gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 14 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.0 to 2.3 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Clanalpine Soil

Classification: Typic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic and andesitic tuff
Slope: 50 to 75 percent
Elevation: 6,500 to 8,000 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper

Typical Profile

Rock fragments on surface: 5 percent stones and boulders, 10 percent cobbles, 40 percent pebbles
Depth: 0 to 10 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 10 to 39 inches
Texture: Very gravelly clay loam, very cobbly loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Mildly alkaline
Depth: 39 inches
**Kind of material:** Weathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 20 to 40 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow  
*Available water capacity:* 4.3 to 5.7 inches  
*Water-supplying capacity:* 14 inches  
*Runoff:* Rapid  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.17; T value—2; wind erodibility group—7  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—moderate; to concrete—low  
*Potential for frost action:* Moderate

**Characteristics of the Rock Outcrop**

*Positions on landscape:* Scattered peaks and cliffs  
*Dominant present vegetation:* None

### Contrasting Inclusions

**Inclusion 1**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* Crests of mountains  
*Distinctive present vegetation:* Low sagebrush, black sagebrush, bluegrass

**Inclusion 2**

*Classification:* Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic  
*Positions on landscape:* The lowest convex side slopes of mountains  
*Distinctive present vegetation:* Black sagebrush, rabbitbrush, bottlebrush squirreltail

**Inclusion 3**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid  
*Positions on landscape:* North-facing side slopes of mountains in areas where snow accumulates  
*Distinctive present vegetation:* Mountain big sagebrush, bluegrass

### Major Uses

*Current uses:* Livestock grazing, wildlife habitat  
*Potential foreseeable use:* Cordwood production

### Suitability for Wildlife Habitat Elements

**Itca Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Coniferous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

**Clanapline Soil**

*Wild herbaceous plants (nonirrigated):* Fair  
*Coniferous plants (nonirrigated):* Fair  
*Shrubs (nonirrigated):* Fair

### Suitability and Limitations for Selected Uses

**Itca Soil**

*Range seeding:* Poor—droughty  
*Roadfill:* Poor—depth to rock, large stones, slope  
*Topsoil:* Poor—depth to rock, small stones, too clayey  
*Daily cover for landfill:* Poor—depth to rock, too clayey, small stones  
*Shallow excavations:* Severe—depth to rock, large stones, slope  
*Local roads and streets:* Severe—depth to rock, large stones, slope  
*Pond reservoir areas:* Severe—depth to rock, slope  
*Embankments, dikes, and levees:* Severe—large stones  
*Sand:* Improbable source—excess fines, large stones  
*Gravel:* Improbable source—excess fines, large stones

**Clanapline Soil**

*Range seeding:* Poor—small stones, erodes easily  
*Roadfill:* Poor—depth to rock, slope  
*Topsoil:* Poor—small stones, slope  
*Daily cover for landfill:* Poor—depth to rock, small stones, slope  
*Shallow excavations:* Severe—slope  
*Local roads and streets:* Severe—slope  
*Pond reservoir areas:* Severe—slope  
*Embankments, dikes, and levees:* Moderate—large stones  
*Sand:* Improbable source—excess fines  
*Gravel:* Improbable source—excess fines

### Interpretive Groups

*Land capability classification:* Itca soil—VIIe, nonirrigated; Clanapline soil—VIIIs, nonirrigated; Rock outcrop—VIIIs, nonirrigated  
*Range site:* Itca and Clanapline soils—025X061N; Rock outcrop—none; Inclusion 1—024X016N; Inclusion 2—028B016N; Inclusion 3—027X054N

### 3136—Itca-Roca-Reluctan association

*Positions on landscape:* Mountains

### Composition

*Major components:*  
*Itca* very cobbly loam, 15 to 50 percent slopes—45 percent  
*Roca* very cobbly loam, 30 to 50 percent slopes—25 percent  
*Reluctan* cobbly loam, 15 to 30 percent slopes—15 percent
Contrasting inclusions:
Durixerollic Camborthids, coarse-loamy, mixed, frigid, 2 to 8 percent slopes—8 percent
Lithic Xerollic Haplargids, loamy-skeletal, montmorillonitic, mesic, 4 to 15 percent slopes—5 percent
Rock outcrop—2 percent

**Characteristics of the Itca Soil**

**Classification:** Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid

**Positions on landscape:** Convex, north-facing side slopes of mountains

**Parent material:** Residuum derived from extrusive volcanic and pyroclastic rock

**Slope:** 15 to 50 percent

**Elevation:** 6,100 to 6,500 feet

**Average annual precipitation:** About 14 inches

**Average annual air temperature:** About 43 degrees F

**Frost-free season:** About 80 days

**Dominant present vegetation:** Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

**Site index for singleleaf pinyon:** 70

**Typical Profile**

**Rock fragments on surface:** 30 percent cobbles, 20 percent pebbles

**Depth:** 0 to 2 inches

**Texture:** Very cobbly loam

**Structure:** Platy

**Consistence:** Slightly hard, very friable

**Reaction:** Neutral

**Depth:** 2 to 14 inches

**Texture:** Very cobbly clay, very gravelly clay loam

**Structure:** Prismatic

**Consistence:** Hard, firm

**Reaction:** Mildly alkaline

**Depth:** 14 inches

**Kind of material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 10 to 20 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Slow

**Available water capacity:** 1.8 to 2.3 inches

**Water-supplying capacity:** 10 inches

**Runoff:** Rapid

**Hydrologic group:** D

**Erosion factors (upper layer):** K value—0.10; T value—2; wind erodibility group—8

**Hazard of erosion:** By water—moderate; by wind—slight

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Moderate

**Characteristics of the Roca Soil**

**Classification:** Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

**Positions on landscape:** South-facing side slopes of mountains

**Parent material:** Residuum derived from shale and chert

**Slope:** 30 to 50 percent

**Elevation:** 6,100 to 6,500 feet

**Average annual precipitation:** About 10 inches

**Average annual air temperature:** About 45 degrees F

**Frost-free season:** About 100 days

**Dominant present vegetation:** Bluegrass, bluebunch wheatgrass, big sagebrush

**Typical Profile**

**Rock fragments on surface:** 30 percent cobbles, 20 percent pebbles

**Depth:** 0 to 4 inches

**Texture:** Very cobbly loam

**Structure:** Subangular blocky

**Consistence:** Slightly hard, very friable

**Reaction:** Neutral

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 4 to 24 inches

**Texture:** Very gravelly clay loam, very gravelly clay

**Structure:** Angular blocky

**Consistence:** Hard, firm

**Reaction:** Mildly alkaline

**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 24 inches

**Kind of material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 20 to 40 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Very slow

**Available water capacity:** 2.6 to 3.4 inches

**Water-supplying capacity:** 11 inches

**Runoff:** Rapid

**Hydrologic group:** D

**Erosion factors (upper layer):** K value—0.10; T value—2; wind erodibility group—8

**Hazard of erosion:** By water—moderate; by wind—slight

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Low
Characteristics of the Reluctan Soil

Classification: Aridic Argixerolls, fine-loamy, mixed, frigid
Positions on landscape: Concave, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic rock
Slope: 15 to 30 percent
Elevation: 6,100 to 6,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

Typical Profile

Rock fragments on surface: 15 percent cobbles, 15 percent pebbles
Depth: 0 to 9 inches
Texture: Cobbly loam
Structure: Flaky
Consistence: Slightly hard, friable
Reaction: Neutral
Depth: 9 to 27 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 27 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.2 to 4.3 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerolic Camborthids, coarse-loamy, mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 2
Classification: Lithic Xerollolic Haplarnids, loamy-skeletal, montmorillonitic, mesic
Positions on landscape: The lowest areas on crests of mountains
Distinctive present vegetation: Wyoming big sagebrush, bluegrass

Inclusion 3
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Itca Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Roca Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Reluctan Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Itca Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones, slope
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Roca Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Reluctan Soil
Range seeding: Fair—large stones, erodes easily
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Itca, Roca, and Reluctan soils—VIII, nonirrigated
Range site: Itca soil—025X061N; Roca soil—024X028N; Reluctan soil—024X021N; Inclusion 1—025X003N; Inclusion 2—028B010N; Inclusion 3—none

3137—Itca-Reluctan-Walti association
Positions on landscape: Mountains

Composition
Major components:
Itca stony loam, 15 to 30 percent slopes—40 percent
Reluctan very cobbly loam, 15 to 30 percent slopes—30 percent
Walti cobbly loam, 8 to 15 percent slopes—15 percent
Contrasting inclusions:
Xerollic Haplargids, loamy-skeletal, mixed, frigid, 15 to 50 percent slopes—8 percent
Rock outcrop—3 percent
Lithic Argixerolls, loamy-skeletal, mixed, frigid, 2 to 8 percent slopes—2 percent
Aridic Haploxerolls, fine-loamy, mixed, frigid, 8 to 15 percent slopes—2 percent

Characteristics of the Reluctan Soil
Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex side slopes of mountains
Parent material: Residuum derived from extrusive volcanic and pyroclastic rock
Slope: 15 to 30 percent
Elevation: 6,400 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush

Site index for singleleaf pinyon: 70

Typical Profile
Rock fragments on surface: 0.1 percent stones and boulders, 10 percent cobbles, 20 percent pebbles
Depth: 0 to 2 inches
Texture: Stony loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 2 to 14 inches
Texture: Very cobbly clay, very gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 14 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2 to 3 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Reluctan Soil
Classification: Aridic Argixerolls, fine-loamy, mixed, frigid
Positions on landscape: Convex, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic rock
Slope: 15 to 30 percent
Elevation: 6,400 to 7,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

Typical Profile
Rock fragments on surface: 25 percent cobbles, 15 percent pebbles
Depth: 0 to 9 inches
Texture: Very cobbly loam
Lander County, Nevada, South Part

Structure: Plat
Consistency: Slightly hard, friable
Reaction: Neutral
Depth: 9 to 27 inches
Texture: Gravely clay loam, gravelly loam
Structure: Subangular blocky
Consistency: Hard, firm
Reaction: Mildly alkaline
Depth: 27 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3 to 5 inches
Water-supplying capacity: 14 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Walti Soil
Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Convex crests and shoulder slopes of mountains
Parent material: Colluvium and residuum derived from rhyolite, andesite, and tuff
Slope: 8 to 15 percent
Elevation: 6,400 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

Typical Profile
Rock fragments on surface: 20 percent cobbles, 15 percent pebbles
Depth: 0 to 4 inches
Texture: Cobbley loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral
Depth: 4 to 10 inches
Texture: Clay loam, gravelly clay loam
Structure: Subangular blocky
Consistency: Hard, friable
Reaction: Neutral
Depth: 10 to 30 inches
Texture: Clay
Structure: Prismatic
Consistency: Very hard, firm
Reaction: Neutral
Depth: 30 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.7 to 4.7 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Xerollic Hapludolls, loamy-skeletal, mixed, frigid
Positions on landscape: Convex, south-facing side slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, mountain big sagebrush

Inclusion 2
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 3
Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Summits of mountains
Distinctive present vegetation: Black sagebrush, low sagebrush

Inclusion 4
Classification: Aridic Haploxerolls, fine-loamy, mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses
Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Cordwood

Suitability for Wildlife Habitat Elements

Itca Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Reluctan Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Waltl Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Itca Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Reluctan Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Waltl Soil
Range seeding: Poor—rooting depth
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones
Daily cover for landfill: Poor—depth to rock, hard to pack
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Itca soil—VIIe, nonirrigated; Reluctan and Waltl soils—VIIa, nonirrigated
Range site: Itca soil—025X061N; Reluctan soil—024X021N; Waltl soil—024X027N; Inclusion 1—024X029N; Inclusion 2—none; Inclusion 3—024X016N; Inclusion 4—025X003N

3140—Sodhouse-Tenabo-Desatoya Variant association
Positions on landscape: Fan piedmonts

Composition
Major components:
Sodhouse very fine sandy loam, 2 to 4 percent slopes—35 percent
Tenabo very fine sandy loam, 2 to 4 percent slopes—30 percent
Desatoya Variant gravelly fine sandy loam, 4 to 8 percent slopes—20 percent
Contrasting inclusions:
Durixerolic Camborthids, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—5 percent
Duric Camborthids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—5 percent
Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow, 15 to 50 percent slopes—5 percent

Characteristics of the Sodhouse Soil
Classification: Typic Durorthids, loamy, mixed, mesic, shallow
Positions on landscape: Slightly convex areas on summits of fan piedmont remnants
Parent material: Mixed alluvium that includes loess and volcanic ash
Slope: 2 to 4 percent
Elevation: 5,200 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 7 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 7 to 14 inches  
Texture: Very fine sandy loam, loam, silt loam  
Structure: Massive  
Consistency: Slightly hard, very friable  
Reaction: Moderately alkaline  
Salinity: 0 to 2 millimhos per centimeter  
Sodicity (SAR): 0 to 2  
Depth: 14 to 42 inches  
Kind of material: Indurated hardpan  
Depth: 42 to 60 inches  
Texture: Gravelly sandy loam  
Structure: Massive  
Consistency: Slightly hard, friable  
Reaction: Strongly alkaline  
Salinity: 0 to 8 millimhos per centimeter  
Sodicity (SAR): 0 to 13  

**Soil and Water Features**  
Depth to the hardpan: 14 to 20 inches  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Moderate  
Available water capacity: 2.1 to 3.5 inches  
Water-supplying capacity: 7 inches  
Runoff: Slow  
Hydrologic group: D  
Erosion factors (upper layer): K value—0.55; T value—1; wind erodibility group—3  
Hazard of erosion: By water—slight; by wind—slight  
Shrink-swell potential: Low  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Low  

**Characteristics of the Tenabo Soil**  
Classification: Typic Nadurargids, loamy, mixed, mesic, shallow  
Positions on landscape: Slightly concave areas on summits of fan piedmont remnants  
Parent material: Thin loess mantle that is high in content of volcanic ash over mixed alluvium  
Slope: 2 to 4 percent  
Elevation: 5,200 to 5,700 feet  
Average annual precipitation: About 7 inches  
Average annual air temperature: About 48 degrees F  
Frost-free season: About 110 days  
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass  

**Typical Profile**  
Rock fragments on surface: 30 percent pebbles  
Depth: 0 to 4 inches  
Texture: Very fine sandy loam  
Structure: Platy  

Consistency: Slightly hard, very friable  
Reaction: Moderately alkaline  
Salinity: 2 to 4 millimhos per centimeter  
Sodicity (SAR): 2 to 10  
Depth: 4 to 15 inches  
Texture: Clay loam, gravelly clay loam, silty clay loam  
Structure: Prismatic  
Consistency: Hard, friable  
Reaction: Strongly alkaline  
Salinity: 2 to 4 millimhos per centimeter  
Sodicity (SAR): 20 to 40  
Depth: 15 to 28 inches  
Kind of material: Indurated hardpan  
Structure: Platy  
Consistency: Extremely hard, extremely firm  
Depth: 28 to 60 inches  
Kind of material: Stratified very gravelly sandy loam to extremely gravelly coarse sand  
Structure: Single grain  
Consistency: Loose  
Reaction: Strongly alkaline  
Salinity: 8 to 16 millimhos per centimeter  
Sodicity (SAR): 20 to 40  

**Soil and Water Features**  
Depth to the hardpan: 9 to 20 inches  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Moderately slow  
Available water capacity: 2.8 to 4.0 inches  
Water-supplying capacity: 7 inches  
Runoff: Medium  
Hydrologic group: D  
Erosion factors (upper layer): K value—0.55; T value—1; wind erodibility group—3  
Hazard of erosion: By water—slight; by wind—slight  
Shrink-swell potential: Moderate  
Corrosivity: To steel—high; to concrete—moderate  
Potential for frost action: Low  

**Characteristics of the Desatoya Variant Soil**  
Classification: Xerollic Haplargids, fine-loamy, mixed, mesic  
Positions on landscape: Side slopes of fan piedmont remnants  
Parent material: Mixed alluvium  
Slope: 4 to 8 percent  
Elevation: 5,200 to 5,700 feet  
Average annual precipitation: About 9 inches  
Average annual air temperature: About 49 degrees F  
Frost-free season: About 110 days  
Dominant present vegetation: Bottlebrush squirreltail, bluegrass, Indian ricegrass, black sagebrush
Typical Profile
Rock fragments on surface: 5 percent cobbles, 45 percent pebbles
Depth: 0 to 3 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 3 to 13 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 13 to 26 inches
Texture: Very gravelly sandy loam
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 26 to 60 inches
Texture: Very gravelly sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate over rapid
Available water capacity: 2.7 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Inclusion 2
Classification: Duric Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Scars of fan piedmont remnants

Inclusion 3
Classification: Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow
Positions on landscape: Remnants of rolling hills adjacent to fan piedmonts

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Sodhouse Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Tenabo Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Desatoya Variant Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Sodhouse Soil
Range seeding: Poor—too arid, droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Moderate—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Tenabo Soil
Range seeding: Poor—too arid, droughty, excess sodium
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones, too sandy
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage,
excess sodium, excess salt
Sand: Probable source
Gravel: Probable source

Desatoya Variant Soil
Range seeding: Fair—too arid, droughty
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small
stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Sodhouse, Tenabo, and
Desatoya Variant soils—IlVe, irrigated, and IlVs,
nonirrigated
Range site: Sodhouse and Tenabo soils—024X002N;
Desatoya Variant soil—024X030N; Inclusion 1—
028B010N; Inclusion 2—024X002N; Inclusion 3—
024X030N

3151—Robson-Ninemile-Ravenswood
association
Positions on landscape: Mountains

Composition
Major components:
Robson very cobbly loam, 15 to 30 percent slopes—35
percent
Ninemile extremely cobbly loam, 15 to 30 percent
slopes—25 percent
Ravenswood gravelly loam, 30 to 50 percent slopes,
extremely stony—25 percent
Contrasting inclusions:
Rock outcrop—8 percent
Pachic Argixerolls, fine, montmorillonitic, frigid, 8 to 15
percent slopes—3 percent
Pachic Argixerolls, fine, montmorillonitic, frigid, 2 to 8
percent slopes—2 percent
Rubble land—2 percent

Characteristics of the Robson Soil
Classification: Lithic Xerolic Haplargids, clayey-skeletal,
montmorillonitic, frigid
Positions on landscape: Convex, south-facing side
slopes of mountains
Parent material: Residuum derived from siliceous tuff,
rhyolite, and andesite
Slope: 15 to 30 percent
Elevation: 6,800 to 7,400 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Low sagebrush, Sandberg
bluegrass

Typical Profile
Rock fragments on surface: 25 percent cobbles, 20
percent pebbles
Depth: 0 to 2 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 2 to 5 inches
Texture: Very cobbly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Depth: 5 to 15 inches
Texture: Very cobbly clay, extremely cobbly clay
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 15 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 12 to 20 inches
Depth to a seasonal high water table: More than 60
inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 0.6 to 1.2 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1;
wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Ninemile Soil
Classification: Lithic Argixerolls, clayey, montmorillonitic,
frigid
Positions on landscape: Convex, north-facing side
slopes of mountains
Parent material: Residuum derived from andesite, basalt, and tuff
Slope: 15 to 30 percent
Elevation: 6,800 to 7,400 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Low sagebrush, bluegrass, needlegrass, Idaho fescue, singleleaf pinyon

**Typical Profile**

Rock fragments on surface: 10 percent stones and boulders, 40 percent cobbles, 25 percent pebbles
Depth: 0 to 7 inches
Texture: Extremely cobbly loam
Structure: Granular
Consistency: Slightly hard, friable
Reaction: Neutral
Depth: 7 to 19 inches
Texture: Clay, gravelly clay
Structure: Prismatic
Consistency: Hard, firm
Reaction: Neutral
Depth: 19 inches
Kind of material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.2 to 2.7 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

**Characteristics of the Ravenswood Soil**

Classification: Typic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Slightly concave, north- and east-facing side slopes of mountains
Parent material: Colluvium and residuum derived from metavolcanic and volcanic rock
Slope: 30 to 50 percent
Elevation: 6,800 to 7,400 feet
Average annual precipitation: About 14 inches

Average annual air temperature: About 42 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass, mountain big sagebrush, singleleaf pinyon
Site index for singleleaf pinyon: 55

**Typical Profile**

Rock fragments on surface: 3 percent stones and boulders, 10 percent cobbles, 65 percent pebbles
Depth: 0 to 9 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 9 to 13 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Depth: 13 to 36 inches
Texture: Very gravelly clay
Structure: Angular blocky
Consistency: Hard, firm
Reaction: Mildly alkaline
Depth: 36 inches
Kind of material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 30 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 5 to 6 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.20; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

**Contrasting Inclusions**

**Inclusion 1**

Positions on landscape: Rims, cliffs
Distinctive present vegetation: None

**Inclusion 2**

Classification: Pachic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Concave, lower side slopes of mountains
Distinctive present vegetation: Snowberry, mountain big sagebrush, bluebunch wheatgrass

Inclusion 3
Classification: Pachic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Mountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 4
Positions on landscape: Side slopes of mountains below areas of Rock outcrop
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Robson Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Ninemile Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Ravenswood Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Robson Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines

Ravenswood Soil
Range seeding: Poor—eroses easily
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Robson and Ninemile soils—VII, nonirrigated; Ravenswood soil—VIIa, nonirrigated
Range site: Robson soil—028B045N; Nine mile soil—028B037N; Ravenswood soil—025X061N; Inclusion 1—one; Inclusion 2—028B027N; Inclusion 3—028B003N; Inclusion 4—one

3153—Robson-Locene-Softscrabbled association

Positions on landscape: Mountains

Composition

Major components:
Robson cobbly loam, 15 to 30 percent slopes—55 percent
Locane gravelly loam, 30 to 50 percent slopes—20 percent
Softscrabble gravelly loam, 15 to 30 percent slopes—15 percent

Contrasting inclusions:
Welch loam, drained, 2 to 8 percent slopes—7 percent
Rock outcrop—2 percent
Rubble land—1 percent

Characteristics of the Robson Soil
Classification: Lithic Xerolodic Hapludands, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex crests and shoulder slopes of mountains
Parent material: Residuum derived from siliceous tuff, rhyolite, and andesite
Slope: 15 to 30 percent
Elevation: 6,400 to 7,400 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Low sagebrush, Sandberg bluegrass

Typical Profile
Rock fragments on surface: 20 percent cobbles, 10 percent pebbles
Depth: 0 to 2 inches
Texture: Cobbly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral

Depth: 2 to 15 inches
Texture: Very cobbly clay, extremely cobbly clay
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline

Depth: 15 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 0.6 to 1.2 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1;
wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Locane Soil
Classification: Lithic Xerolic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex, south-facing side slopes of mountains
Parent material: Residuum derived from shale and conglomerate
Slope: 30 to 50 percent
Elevation: 6,400 to 7,400 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Depth: 0 to 6 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 6 to 14 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 14 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.5 to 2.1 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1;
wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Softscrabble Soil
Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 6,400 to 7,400 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 16 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly blocky
Reaction: Neutral

Depth: 16 to 30 inches
Texture: Very cobbly clay loam
Structure: Angular blocky  
Consistency: Hard, friable  
Reaction: Neutral  

Depth: 30 to 60 inches  
Texture: Gravelly clay loam  
Structure: Angular blocky  
Consistency: Hard, friable  
Reaction: Neutral  

Soil and Water Features  

Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Slow  
Available water capacity: 7.8 to 9.2 inches  
Water-supplying capacity: 14 inches  
Runoff: Rapid  
Hydrologic group: C  
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—6  
Hazard of erosion: By water—moderate; by wind—slight  
Shrink-swell potential: Low  
Corrosivity: To steel—moderate; to concrete—low  
Potential for frost action: Moderate  

Contrasting Inclusions  

Inclusion 1  
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid  
Positions on landscape: Mountain drainageways  
Distinctive present vegetation: Basin big sagebrush, basin wildrye  

Inclusion 2  
Positions on landscape: Scattered peaks  
Distinctive present vegetation: None  

Inclusion 3  
Positions on landscape: Side slopes below areas of Rock outcrop  
Distinctive present vegetation: None  

Major Current Uses  

Livestock grazing, wildlife habitat  

Suitability for Wildlife Habitat Elements  

Robson Soil  
Wild herbaceous plants (nonirrigated): Fair  
Shrubs (nonirrigated): Fair  

Locane Soil  
Wild herbaceous plants (nonirrigated): Fair  
Shrubs (nonirrigated): Fair  

Softscrabbles Soil  
Wild herbaceous plants (nonirrigated): Fair  
Shrubs (nonirrigated): Fair  

Suitability and Limitations for Selected Uses  

Robson Soil  
Range seeding: Poor—droughty  
Roadfill: Poor—depth to rock, large stones  
Topsoil: Poor—depth to rock, too clayey, large stones  
Daily cover for landfill: Poor—depth to rock, large stones, slope  
Shallow excavations: Severe—depth to rock, large stones, slope  
Local roads and streets: Severe—depth to rock, large stones, slope  
Pond reservoir areas: Severe—depth to rock, slope  
Embankments, dikes, and levees: Severe—large stones  
Sand: Improbable source—excess fines, large stones  
Gravel: Improbable source—excess fines, large stones  

Locane Soil  
Range seeding: Poor—droughty, erodes easily  
Roadfill: Poor—depth to rock, slope  
Topsoil: Poor—depth to rock, small stones, slope  
Daily cover for landfill: Poor—depth to rock, small stones, slope  
Shallow excavations: Severe—depth to rock, slope  
Local roads and streets: Severe—depth to rock, slope  
Pond reservoir areas: Severe—depth to rock, slope  
Embankments, dikes, and levees: Severe—thin layer  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines  

Softscrabbles Soil  
Range seeding: Fair—erodes easily  
Roadfill: Fair—large stones, slope, shrink-swell  
Topsoil: Poor—small stones, area reclaim, slope  
Daily cover for landfill: Poor—small stones, slope  
Shallow excavations: Severe—slope  
Local roads and streets: Severe—slope  
Pond reservoir areas: Severe—slope  
Embankments, dikes, and levees: Moderate—large stones  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines  

Interpretive Groups  

Land capability classification: Robson and Locane soils—VIIe, nonirrigated; Softscrabbles soil—Vle, nonirrigated  
Range site: Robson soil—024X018N; Locane soil—024X005N; Softscrabbles soil—024X021N; Inclusion 1—028B024N; Inclusions 2 and 3—none  

3l54—Robson-Locane-Rock outcrop association  
Positions on landscape: Foothills
**Composition**

Major components:
Robson very gravelly loam, 8 to 15 percent slopes—40 percent
Locane very gravelly fine sandy loam, 8 to 15 percent slopes—30 percent
Rock outcrop—15 percent
Contrasting inclusions:
Cumulic Haploxerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—8 percent
Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid, 15 to 30 percent slopes—4 percent
Ilca very cobbly loam, 15 to 30 percent slopes—3 percent

**Characteristics of the Robson Soil**

Classification: Lithic Xerorthic Hapludands, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: North-facing summits and side slopes of foothills
Parent material: Residuum derived from siliceous tuff, rhyolite, and andesite
Slope: 8 to 15 percent
Elevation: 6,700 to 7,300 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Low sagebrush, Sandberg bluegrass

**Typical Profile**

Depth: 0 to 2 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral

Depth: 2 to 15 inches
Texture: Very cobbly clay, extremely cobbly clay
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Mildly alkaline

Depth: 15 inches
Kind of material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 0.6 to 1.2 inches
Water-supplying capacity: 9 inches
Runoff: Rapid

Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

**Characteristics of the Locane Soil**

Classification: Lithic Xerollc Hapludands, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: South-facing side slopes of foothills
Parent material: Residuum derived from shale and conglomerate
Slope: 8 to 15 percent
Elevation: 6,700 to 7,300 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**

Depth: 0 to 6 inches
Texture: Very gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 6 to 14 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 14 inches
Kind of material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low
Characteristics of the Rock Outcrop

Positions on landscape: Scattered peaks, side slopes of foothills

Contrasting Inclusions

Inclusion 1
Classification: Cumulic Hapludolls, fine-loamy, mixed, frigid
Positions on landscape: Foothill drainageways
Distinctive present vegetation: Basin big sagebrush, bluegrass

Inclusion 2
Classification: Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: The upper, north-facing side slopes of foothills
Distinctive present vegetation: Low sagebrush, Idaho fescue

Inclusion 3
Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Slightly concave side slopes of foothills near areas of Rock outcrop
Distinctive present vegetation: Singleleaf pinyon, mountain big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Robson Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Locane Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Robson Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, large stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Locane Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Interpretive Groups

Land capability classification: Robson and Locane soils—VIIa, nonirrigated; Rock outcrop—VIIIa, nonirrigated
Range site: Robson soil—024X018N; Locane soil—024X005N; Rock outcrop—none; Inclusion 1—025X003N; Inclusion 2—024X027N; Inclusion 3—025X061N

3155—Robson-Itca-Sofscrable association

Positions on landscape: Mountains

Composition

Major components:
Robson very gravelly loam, 15 to 30 percent slopes—40 percent
Itca very gravelly loam, 30 to 50 percent slopes—25 percent
Softscrable gravelly loam, 15 to 30 percent slopes—20 percent

Contrasting inclusions:
Aridic Argixerolls, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—5 percent
Rock outcrop—4 percent
Cumulic Haploxerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—3 percent
Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, 50 to 75 percent slopes—3 percent

Characteristics of the Robson Soil

Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex crests, shoulder slopes, and side slopes of mountains
Parent material: Residuum derived from siliceous tuff, rhyolite, and andesite
Slope: 15 to 30 percent
Elevation: 6,700 to 7,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Low sagebrush, Sandberg bluegrass

**Typical Profile**

Rock fragments on surface: 40 percent pebbles
Depth: 0 to 2 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral

Depth: 2 to 15 inches
Texture: Very cobbly clay, extremely cobbly clay
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline

Depth: 15 inches
Kind of material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 0.6 to 1.2 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

**Characteristics of the Softscabblle Soil**

Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 6,700 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush
Site index for singleleaf pinyon: 65

**Typical Profile**

Depth: 0 to 9 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 9 to 17 inches
Texture: Very gravelly clay, very gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline

Depth: 17 inches
Kind of material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.5 to 2.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Softscabblle Soil**

Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 7,000 to 7,500 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

**Typical Profile**

Depth: 0 to 16 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 16 to 30 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral
Depth: 30 to 60 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 7.8 to 9.2 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Aridic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Convex toe slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, bluebunch wheatgrass, snowberry

Inclusion 2
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 3
Classification: Cumulic Haploxerolls, fine-loamy, mixed, frigid
Positions on landscape: Mountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 4
Classification: Lithic Xerolic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Eroded, lower side slopes of mountains
Distinctive present vegetation: Utah juniper, mountain big sagebrush, singleleaf pinyon

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Robson Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Itca Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Softscrabble Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Robson Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Itca Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Softscrabble Soil
Range seeding: Fair—erodes easily
Roadfill: Fair—large stones, slope, shrink-swell
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Robson and Itca soils—VIII, nonirrigated; Softscrabble soil—Vle, nonirrigated
Range site: Robson soil—024X018N; Itca soil—025X021N; Softscrabble soil—024X021N; Inclusion 1—025X014N; Inclusion 2—none; Inclusion 3—028B024N; Inclusion 4—025X062N

3170—Teguro-Rubble land-Punchbowl association

Positions on landscape: Mountains

Composition

Major components:
Teguro very gravelly loam, 30 to 50 percent slopes, rubbly—40 percent
Rubble land—25 percent
Punchbowl cobbly loam, 30 to 50 percent slopes—20 percent
Contrasting inclusions:
Jung very cobbly loam, 15 to 30 percent slopes—5 percent
Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 30 to 75 percent slopes—5 percent
Rock outcrop—5 percent

Characteristics of the Teguro Soil

Classification: Lithic Argixerolls, loamy, mixed, frigid
Positions on landscape: North-facing side slopes of mountains
Parent material: Residuum derived from tuff
Slope: 30 to 50 percent
Elevation: 7,000 to 8,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluegrass, needlegrass, mountain big sagebrush, singleleaf pinyon, Utah juniper
Site index for common trees: Singleleaf pinyon—30; Utah juniper—30

Typical Profile

Rock fragments on surface: 20 percent stones and boulders, 55 percent pebbles
Depth: 0 to 6 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 6 to 16 inches
Texture: Gravelly loam, gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Neutral

Depth: 16 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rubble Land

Positions on landscape: Side slopes of mountains
Kind of material: More than 90 percent cobbles

Characteristics of the Punchbowl Soil

Classification: Lithic Xerolic Haplargids, loamy, mixed, frigid
Positions on landscape: Slightly convex, east- and west-facing and upper, south-facing side slopes of mountains
Parent material: Residuum derived from andesite, dacite, rhyolite, and tuff
Slope: 30 to 50 percent
Elevation: 7,000 to 8,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile

Depth: 0 to 3 inches
Texture: Cobbly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 3 to 7 inches
Texture: Gravelly loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 7 to 11 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 11 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.6 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Lithic Xerolic Haplargids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: The lower, south-facing side slopes of mountains
Distinctive present vegetation: Black sagebrush, rabbitbrush, bluegrass

Inclusion 2
Classification: Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Severely eroded side slopes of mountains
Distinctive present vegetation: Utah juniper, singleleaf pinyon, bluegrass

Inclusion 3
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Teguro Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Punchbowl Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Teguro Soil
Range seeding: Poor—large stones, droughty
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Punchbowl Soil
Range seeding: Poor—droughty, erodes easily
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Teguro soil—Vlls, nonirrigated; Rubble land—Vlls, nonirrigated; Punchbowl soil—Vll, nonirrigated
Range site: Teguro soil—025X062N; Rubble land—none; Punchbowl soil—024X030N; Inclusion 1—024X030N; Inclusion 2—025X062N; Inclusion 3—none

3181—Newlands-Packer-Hapgood association, moderately steep
Positions on landscape: Mountains

Composition
Major components:
Newlands loam, 15 to 30 percent slopes—40 percent
Packer very gravelly loam, 8 to 15 percent slopes—30 percent
Hapgood gravelly loam, 30 to 50 percent slopes—15 percent
Contrasting inclusions:
Layview very cobbly loam, 8 to 15 percent slopes—8 percent
Rock outcrop—4 percent
Hackwood loam, 15 to 30 percent slopes, rubbly—3 percent
Characteristics of the Newlands Soil

Classification: Argic Cryoborolls, fine-loamy, mixed
Positions on landscape: Smooth, intermediate and lower side slopes of mountains
Parent material: Colluvium and residuum derived from andesite and rhyolite
Slope: 15 to 30 percent
Elevation: 8,200 to 9,500 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Mountain brome, needlegrass, mountain big sagebrush

Typical Profile
Depth: 0 to 10 inches
Texture: Loam
Structure: Granular
Consistence: Soft, very friable
Reaction: Neutral

Depth: 10 to 46 inches
Texture: Gravely clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 46 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 6.3 to 7.3 inches
Water-supplying capacity: 14 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.28; T value—3; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Hapgood Soil

Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Concave, north-facing side slopes of mountains
Parent material: Colluvium that includes loess and volcanic ash
Slope: 30 to 50 percent
Elevation: 7,800 to 9,500 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 16 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry
Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 17 to 40 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 40 to 60 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.4 inches
Water-supplying capacity: 16 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5;
wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steels—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Argic Lithic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Convex, windswept crests of mountains
Distinctive present vegetation: Black sagebrush, low sagebrush, rabbitbrush

Inclusion 2
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 3
Classification: Pachic Cryoborolls, fine-loamy, mixed
Positions on landscape: Side slopes of mountains in areas where snow accumulates and below areas of rock outcrop
Distinctive present vegetation: Quaking aspen

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Newlands Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Packer Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Hapgood Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Newlands Soil
Range seeding: Fair—erodes easily
Roadfill: Fair—depth to rock, thin layer, slope
Topsoil: Poor—small stones, depth to rock, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Packer Soil
Range seeding: Poor—small stones
Roadfill: Fair—large stones
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—slope, large stones
Local roads and streets: Moderate—slope, frost action, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Hapgood Soil
Range seeding: Poor—erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Interpretive Groups

Land capability classification: Newlands soil—Vle, nonirrigated; Packer soil—Vlls, nonirrigated; Hapgood soil—Vlle, nonirrigated
Range site: Newlands soil—028B029N; Packer soil—024X016N; Hapgood soil—024X032N; Inclusion 1—024X016N; Inclusion 2—none; Inclusion 3—025X065N

3182—Newlands-Packer-Hapgood association, strongly sloping

Positions on landscape: Mountains

Composition

Major components:
Newlands extremely bouldery loam, 8 to 15 percent slopes—50 percent
Packer extremely gravelly loam, 8 to 15 percent slopes—30 percent
Hapgood gravelly loam, 2 to 8 percent slopes—10 percent

Contrasting inclusions:
Rock outcrop—4 percent
Lithic Cryoborolls, loamy-skeletal, mixed, 8 to 15 percent slopes—3 percent
Cumotic Cryaquolls, fine-loamy, mixed, 2 to 8 percent slopes—3 percent

Characteristics of the Newlands Soil

Classification: Argic Cryoborolls, fine-loamy, mixed
Positions on landscape: Concave side slopes of mountains
Parent material: Colluvium and residuum derived from andesite and rhyolite
Slope: 8 to 15 percent
Elevation: 7,800 to 9,500 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Mountain brome, needlegrass, mountain big sagebrush

Typical Profile

Rock fragments on surface: 12 percent stones and boulders, 15 percent cobbles, 30 percent pebbles
Depth: 0 to 10 inches
Texture: Extremely bouldery loam
Structure: Granular
Consistence: Soft, very friable
Reaction: Neutral

Depth: 10 to 46 inches
Texture: Gravelly clay loam
Structure: Angular blocky

Consistence: Hard, friable
Reaction: Neutral

Depth: 46 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5 to 7 inches
Water-supplying capacity: 14 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.15; T value—3; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Packer Soil

Classification: Argic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Convex, windswept shoulder slopes and upper side slopes of mountains
Parent material: Mixed residuum that includes loess and volcanic ash
Slope: 8 to 15 percent
Elevation: 7,800 to 9,500 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

Typical Profile

Depth: 0 to 10 inches
Texture: Extremely gravelly loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Neutral

Depth: 10 to 21 inches
Texture: Extremely cobbly clay loam, extremely cobbly loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 21 to 60 inches
Texture: Extremely cobbly sandy loam, extremely cobbly loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Neutral
Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.6 to 5.5 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Hapgood Soil
Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Concave back slopes and incipient drainageways of mountains
Parent material: Colluvium that includes loess and volcanic ash
Slope: 2 to 8 percent
Elevation: 7,800 to 9,500 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

Typical Profile
Rock fragments on surface: 10 percent pebbles
Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 17 to 40 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 40 to 60 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Neutral

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.4 inches
Water-supplying capacity: 16 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Positions on landscape: Scattered peaks of mountains
Distinctive present vegetation: None

Inclusion 2
Classification: Lithic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Windswept crests and shoulder slopes of mountains near areas of Rock outcrop
Distinctive present vegetation: Low sagebrush, black sagebrush, bluegrass

Inclusion 3
Classification: Cumulic Cryaquolls, fine-loamy, mixed
Positions on landscape: Narrow drainageways of mountains
Distinctive present vegetation: Sedge, iris, alpine timothy

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Newlands Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Packer Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Hapgood Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Newlands Soil
Range seeding: Poor—large stones
Roadfill: Fair—depth to rock, thin layer
Topsoil: Poor—small stones, depth to rock
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—depth to rock, slope
Local roads and streets: Moderate—slope, shrink-swell, frost action
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Packer Soil**

*Range seeding:* Poor—small stones
*Roadfill:* Fair—large stones
*Topsoil:* Poor—small stones, area reclaim
*Daily cover for landfill:* Poor—small stones
*Shallow excavations:* Moderate—slope, large stones
*Local roads and streets:* Severe—slope, frost action, large stones
*Pond reservoir areas:* Severe—seepage, slope
*Embankments, dikes, and levees:* Severe—seepage, large stones
*Sand:* Improbable source—excess fines, large stones
*Gravel:* Improbable source—excess fines, large stones

**Hapgood Soil**

*Range seeding:* Fair—small stones
*Roadfill:* Good
*Topsoil:* Poor—small stones, area reclaim
*Daily cover for landfill:* Poor—small stones
*Shallow excavations:* Slight
*Local roads and streets:* Moderate—frost action
*Pond reservoir areas:* Moderate—slope, seepage
*Embankments, dikes, and levees:* Moderate—large stones
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Newlands and Packer soils—VII, nonirrigated; Hapgood soil—VII, nonirrigated

*Range site:* Newlands soil—02B029N; Packer soil—024X016N; Hapgood soil—024X032N; Inclusion 1—none; Inclusion 2—024X016N; Inclusion 3—025X005N

---

**3190—Softscrabble-Clanalpine-Walti association**

*Positions on landscape:* Mountains

**Composition**

*Major components:* Softscrabble very cobbly fine sandy loam, 15 to 50 percent slopes—45 percent
*Clanalpine very gravelly loam, 30 to 50 percent slopes, extremely stony—25 percent
*Walti very cobbly loam, 8 to 15 percent slopes—15 percent

*Contrasting inclusions:* Lithic Xeric Torriorthents, loamy-skeletal, mixed, frigid, 8 to 30 percent slopes—6 percent
*Aridic Haploxerolls, fine-loamy, mixed, frigid, 4 to 15 percent slopes—4 percent

---

Cleavage very gravelly fine sandy loam, 4 to 15 percent slopes—3 percent
Rock outcrop—2 percent

**Characteristics of the Softscrabble Soil**

*Classification:* Pachic Argixerolls, loamy-skeletal, mixed, frigid
*Positions on landscape:* Concave, south- and west-facing, upper side slopes of mountains
*Parent material:* Colluvium and residuum derived from volcanic rock
*Slope:* 15 to 50 percent
*Elevation:* 7,000 to 7,900 feet
*Average annual precipitation:* About 16 inches
*Average annual air temperature:* About 44 degrees F
*Frost-free season:* About 70 days
*Dominant present vegetation:* Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

**Typical Profile**

*Depth:* 0 to 16 inches
*Texture:* Very cobbly fine sandy loam
*Structure:* Subangular blocky
*Consistence:* Slightly hard, very friable
*Reaction:* Neutral

*Depth:* 16 to 30 inches
*Texture:* Very cobbly clay loam
*Structure:* Angular blocky
*Consistence:* Hard, friable
*Reaction:* Neutral

*Depth:* 30 to 60 inches
*Texture:* Very gravelly clay loam
*Structure:* Angular blocky
*Consistence:* Hard, friable
*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Slow
*Available water capacity:* 6 to 8 inches
*Water-supplying capacity:* 14 inches
*Runoff:* Rapid
*Hydrologic group:* C
*Erosion factors (upper layer):* K value—0.15; T value—5; wind erodibility group—8
*Hazard of erosion:* By water—moderate; by wind—slight
*Shrink-swell potential:* Low
*Corrosivity:* To steel—moderate; to concrete—low
*Potential for frost action:* Moderate

**Characteristics of the Clanalpine Soil**

*Classification:* Typic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Convex, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolite, andesite, and tuff
Slope: 30 to 50 percent
Elevation: 7,000 to 7,900 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper
Site index for singleleaf pinyon: 75

Typical Profile
Rock fragments on surface: 5 percent stones and boulders, 40 percent cobbles, 20 percent pebbles
Depth: 0 to 10 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 10 to 39 inches
Texture: Very gravelly clay loam, very cobbly loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Middly alkaline

Depth: 39 inches
Kind of material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.5 to 6.0 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Walti Soil
Classification: Aridic Argixerolls, fine, montmorillonitic, frigid
Positions on landscape: Convex shoulder slopes and lower side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolite, andesite, and tuff
Slope: 8 to 15 percent
Elevation: 7,000 to 7,900 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

Typical Profile
Depth: 0 to 4 inches
Texture: Very cobbly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral

Depth: 4 to 10 inches
Texture: Clay loam, gravelly clay loam
Structure: Subangular blocky
Consistency: Hard, friable
Reaction: Neutral

Depth: 10 to 30 inches
Texture: Clay
Structure: Prismatic
Consistency: Very hard, firm
Reaction: Neutral

Depth: 30 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 4 to 5 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Lithic Xeric Torriorthents, loamy-skeletal, mixed, frigid
Positions on landscape: Summits and shoulder slopes of mountains near areas of Rock outcrop
Distinctive present vegetation: Singleleaf pinyon, mountain big sagebrush, Utah juniper
Inclusion 2
Classification: Aridic Haploxerolls, fine-loamy, mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 3
Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Crests of mountains
Distinctive present vegetation: Low sagebrush, black sagebrush, bluegrass

Inclusion 4
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Softscrabble Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Clanapline Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Walti Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Softscrabble Soil
Range seeding: Poor—large stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Walti Soil
Range seeding: Poor—rooting depth, large stones
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, slope
Daily cover for landfill: Poor—depth to rock, hard to pack
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—shrink-swell, low strength
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Softscrabble, Clanapine, and Walti soils—Vlls, nonirrigated
Range site: Softscrabble soil—024X021N; Clanapine soil—025X061N; Walti soil—024X027N; Inclusion 1—025X062N; Inclusion 2—024X015N; Inclusion 3—024X016N; Inclusion 4—none

3192—Softscrabble-Walti-Cleavage association
Positions on landscape: Mountains

Composition
Major components:
Softscrabble very gravelly fine sandy loam, 15 to 30 percent slopes—35 percent
Walti extremely cobbly fine sandy loam, 15 to 30 percent slopes—30 percent
Cleavage very gravelly fine sandy loam, 4 to 15 percent slopes—20 percent
Contrasting inclusions:
Itca very cobbly loam, 15 to 30 percent slopes—9 percent
Aridic Argixerolls, loamy-skeletal, mixed, frigid, 30 to 50 percent slopes—4 percent
Rock outcrop—1 percent
Rubble land—1 percent

Characteristics of the Softscrabble Soil
Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave side slopes of mountains
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 7,000 to 8,200 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

**Typical Profile**

Rock fragments on surface: 5 percent cobbles, 40 percent pebbles
Depth: 0 to 16 inches
Texture: Very gravelly fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 16 to 30 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Depth: 30 to 60 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 7 to 9 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.15; T value—5; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Walti Soil**

Classification: Aridic Argixerolls, fine, montmornillonitic, frigid
Positions on landscape: Convex side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolite, andesite, and tuff
Slope: 15 to 30 percent
Elevation: 7,000 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

**Typical Profile**

Rock fragments on surface: 50 percent cobbles, 20 percent pebbles
Depth: 0 to 4 inches
Texture: Extremely cobbly fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral

Depth: 4 to 10 inches
Texture: Clay loam, gravelly clay loam
Structure: Subangular blocky
Consistency: Hard, friable
Reaction: Neutral

Depth: 10 to 30 inches
Texture: Clay
Structure: Prismatic
Consistency: Very hard, firm
Reaction: Neutral

Depth: 30 inches
Kind of material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.5 to 5.0 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

**Characteristics of the Cleavage Soil**

Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Summits and crests of mountains
Parent material: Residuum derived from rhyolite and other igneous rock
Slope: 4 to 15 percent
Elevation: 7,500 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Low sagebrush, black sagebrush, Idaho fescue, bluegrass

Typical Profile
Rock fragments on surface: 10 percent cobbles, 60 percent pebbles
Depth: 0 to 4 inches
Texture: Very gravelly fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral
Depth: 4 to 18 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Neutral
Depth: 18 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.2 to 2.0 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Crests of mountains near areas of Rock outcrop
Distinctive present vegetation: Singleleaf pinyon, mountain big sagebrush

Inclusion 2
Classification: Aridic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: South-facing side slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, mountain big sagebrush

Inclusion 3
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 4
Positions on landscape: Below areas of Rock outcrop
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Softscramble Soil
Wild herbaceous plants (nonirrigated): Fair
 Shrubs (nonirrigated): Fair
Walti Soil
Wild herbaceous plants (nonirrigated): Fair
 Shrubs (nonirrigated): Fair
Cleavage Soil
Wild herbaceous plants (nonirrigated): Fair
 Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Softscramble Soil
Range seeding: Poor—small stones
Roadfill: Fair—large stones, slope, shrink-swell
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Walti Soil
Range seeding: Poor—rooting depth, large stones
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, slope
Daily cover for landfill: Poor—depth to rock, hard to pack, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—shrink-swell, low strength, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Cleavage Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Softscrabble, Walti, and Cleavage soils—Vls, nonirrigated
Range site: Softscrabble soil—024X021N; Walti soil—024X027N; Cleavage soil—024X016N; Inclusion 1—025X061N; Inclusion 2—024X029N; Inclusions 3 and 4—none

3200—Dewar gravelly loam, 2 to 8 percent slopes
Positions on landscape: Fan piedmonts

Composition

Major component:
Dewar gravelly loam, 2 to 8 percent slopes—85 percent
Contrasting inclusions:
Durixerolic Haplargids, loamy-skeletal, mixed, mesic, 4 to 8 percent slopes—7 percent
Xerolic Durargids, loamy-skeletal, mixed, mesic, shallow, 15 to 30 percent slopes—5 percent
Chiara gravelly loam, 2 to 8 percent slopes—3 percent

Characteristics of the Dewar Soil
Classification: Xerolic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: Summits of fan piedmont remnants
Parent material: Loess and mixed silty alluvium
Slope: 2 to 8 percent
Elevation: 6,200 to 6,700 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass

Typical Profile
Depth: 0 to 4 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 4 to 14 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 14 to 50 inches
Kind of material: Indurated hardpan
Structure: Platy
Consistency: Extremely hard, extremely firm

Soil and Water Features
Depth to the hardpan: 13 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.7 to 2.3 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.37; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Durixerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Xerolic Durargids, loamy-skeletal, mixed, mesic, shallow
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Xerolic Durorthids, loamy, mixed, mesic, shallow
Positions on landscape: Shoulder slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones
Daily cover for landfills: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan
Ebbankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**

Land capability classification: Dewar soil—IVe, irrigated; VIx, nonirrigated
Range site: Dewar soil—02BB010N; Inclusions 0, 1, and 3—02BB010N

**3210—Typic Argixerolls-Torripsammentic Haploxerolls-Glean association**

*Positions on landscape:* Mountains

**Composition**

Major components:
Typic Argixerolls gravelly coarse sandy loam, 15 to 50 percent slopes—50 percent
Torripsammentic Haploxerolls cobbly loamy coarse sand, 30 to 50 percent slopes—20 percent
Gleam very gravelly loam, 15 to 30 percent slopes—15 percent
Contrasting inclusions:
Torriorthentic Haploxerolls, loamy, mixed, frigid, shallow, 30 to 50 percent slopes—8 percent
Xerollic Hapludands, loamy, mixed, frigid, shallow, 30 to 50 percent slopes—5 percent
Dumps—2 percent

**Characteristics of the Typic Argixerolls**

Classification: Typic Argixerolls
*Positions on landscape:* Slightly concave side slopes of mountains
Parent material: Residuum derived from granitic rock
Slope: 15 to 50 percent
Elevation: 6,500 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, Idaho fescue, mountain big sagebrush

**Representative Profile**

Rock fragments on surface: 30 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly coarse sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral
Depth: 4 to 15 inches
Texture: Sandy clay loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Neutral
Depth: 15 inches
Kind of material: Weathered bedrock

**Soil and Water Features**

Depth to bedrock: 10 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.8 to 2.2 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1;
wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Torripsammentic Haploxerolls**

Classification: Torripsammentic Haploxerolls
*Positions on landscape:* Convex, west-facing side slopes of mountains
Parent material: Residuum derived from granitic rock
Slope: 30 to 50 percent
Elevation: 6,500 to 7,500 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, bluegrass, bluebunch wheatgrass
Site index for singleleaf pinyon: 40

**Representative Profile**

Rock fragments on surface: 10 percent cobbles, 10 percent pebbles
Depth: 0 to 2 inches
Texture: Cobbly loamy coarse sand
Structure: Massive
Consistency: Soft, very friable
Reaction: Neutral
Depth: 2 to 7 inches
Texture: Loamy coarse sand, gravelly loamy coarse sand, coarse sand
Structure: Single grain
Consistency: Loose
Reaction: Mildly alkaline
Depth: 7 inches
Lander County, Nevada, South Part

Kind of material: Weathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Rapid
Available water capacity: 0.2 to 0.5 inch
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—3
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Glean Soil

Classification: Pachic Haploxerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave, north- and east-facing side slopes of mountains
Parent material: Colluvium derived from various kinds of rock
Slope: 15 to 30 percent
Elevation: 6,500 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, Idaho fescue, mountain big sagebrush, serviceberry

Typical Profile

Rock fragments on surface: 20 percent pebbles
Depth: 0 to 6 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 6 to 39 inches
Texture: Very gravelly sandy loam, very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 39 to 51 inches
Texture: Very gravelly sandy loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Neutral
Depth: 51 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3 to 5 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—3; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1

Classification: Torriorthent Haploxerolls, loamy, mixed, frigid, shallow
Positions on landscape: Convex, north- and east-facing side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush

Inclusion 2

Classification: Xerolic Hapludands, loamy, mixed, frigid, shallow
Positions on landscape: South-facing side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, bluegrass

Inclusion 3

Positions on landscape: Scattered areas
Kind of material: Mixed soil material and rock from small mines and exploration scrapes
Distinctive present vegetation: None

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Typic Argixerolls
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Torripsammentic Haploxerolls
Wild herbaceous plants (nonirrigated): Poor
Coniferous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Glean Soil
Wild herbaceous plants (nonirrigated): Good
Shrubs (nonirrigated): Good
Suitability and Limitations for Selected Uses

Typic Argixerolls
Range seeding: Poor—eroses easily, droughthy
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Torrripsammentic Haploxerolls
Range seeding: Poor—droughthy
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, too sandy
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—depth to rock, slope
Embarkments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Glean Soil
Range seeding: Poor—small stones
Roadfill: Fair—slope, thin layer, depth to rock
Topsoil: Poor—small stones, depth to rock, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embarkments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Typic Argixerolls and Glean soil—Vile, nonirrigated; Torrripsammentic Haploxerolls—VIIa, nonirrigated
Range site: Typic Argixerolls—024X021N;
Torrripsammentic Haploxerolls—025X061N; Glean soil—024X023N; Inclusion 1—024X021N; Inclusion 2—025X014N; Inclusion 3—none

3231—Stingdorn-Hooplito association
Positions on landscape: Foothills
Composition
Major components:
Stingdorn extremely cobbly loam, 15 to 30 percent slopes—40 percent

Stingdorn very gravelly loam, 4 to 8 percent slopes—25 percent
Hooplito very gravelly loam, 15 to 30 percent slopes—20 percent
Contrasting inclusions:
Lithic Haplargids, loamy-skeletal, mixed, mesic, 15 to 50 percent slopes—8 percent
Xerolic Durargids, loamy-skeletal, mixed, mesic, shallow, 8 to 15 percent slopes—4 percent
Rock outcrop—3 percent

Characteristics of the Stingdorn Soil, Moderately Steep
Classification: Typic Durargids, loamy-skeletal, mixed, mesic, shallow
Positions on landscape: South-facing side slopes of foothills
Parent material: Residuum derived from rhyolite, tuff, and andesite
Slope: 15 to 30 percent
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirltail, shadscale, bud sagebrush

Typical Profile
Rock fragments on surface: 5 percent stones and boulders, 40 percent cobbles, 30 percent pebbles
Depth: 0 to 7 inches
Texture: Extremely cobbly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 7 to 15 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 2 to 13
Depth: 15 to 20 inches
Kind of material: Indurated hardpan
Depth: 20 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to the hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1 to 2 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Stingdorn Soil, Moderately Sloping
Classification: Typic Durargids, loamy-skeletal, mixed,
mesic, shallow
Positions on landscape: Summits of foothills
Parent material: Residuum derived from rhyolite, tuff,
and andesite
Slope: 4 to 8 percent
Elevation: 5,800 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail,
shadscale, bud sagebrush

Typical Profile
Depth: 0 to 7 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 7 to 15 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 2 to 13
Depth: 15 to 20 inches
Kind of material: Indurated hardpan
Depth: 20 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to the hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1 to 2 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1;
wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Hoopleite Soil
Classification: Lithic Xerollic Hapludands, loamy-skeletal,
mixed, mesic
Positions on landscape: North-facing side slopes of
foothills
Parent material: Residuum derived from rhyolitic rock
Slope: 15 to 30 percent
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail,
black sagebrush

Typical Profile
Rock fragments on surface: 10 percent cobbles, 45
percent pebbles
Depth: 0 to 4 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Slightly hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 4 to 8 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 8 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 6 to 14 inches
Depth to a seasonal high water table: More than 60
inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.6 to 1.0 inch
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Lithic Hapludands, loamy-skeletal, mixed, mesic
Positions on landscape: Convex, lower, south-facing side slopes of foothills
Distinctive present vegetation: Shadscale, galleta, bud sagebrush, spiny hopsage

Inclusion 2
Classification: Xerolic Durargids, loamy-skeletal, mixed, mesic, shallow
Positions on landscape: North-facing shoulder slopes of foothills
Distinctive present vegetation: Black sagebrush

Inclusion 3
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Stingdorn Soil, Moderately Steep
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Stingdorn Soil, Moderately Sloping
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Hooplite Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Stingdorn Soil, Moderately Steep
Range seeding: Poor—too arid, droughty, large stones
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, cemented pan, large stones
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, cemented pan, large stones
Local roads and streets: Severe—depth to rock, slope, large stones

Pond reservoir areas: Severe—depth to rock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Stingdorn Soil, Moderately Sloping
Range seeding: Poor—too arid, droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, cemented pan, large stones
Daily cover for landfill: Poor—depth to rock, large stones
Shallow excavations: Severe—depth to rock, cemented pan
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, cemented pan
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Hooplite Soil
Range seeding: Poor—droughty, small stones, depth to rock
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Stingdorn and Hooplite soils—VIIb, nonirrigated
Range site: Stingdorn soils—028B017N; Hooplite soil—028B016N; Inclusion 1—029X022N; Inclusion 2—028B016N; Inclusion 3—none

3251—Caphor-Tenabo-Spasprey association
Positions on landscape: Fan piedmonts, fan skirts

Composition
Major components:
Caphor fine sandy loam, 2 to 4 percent slopes—35 percent
Tenabo very gravelly fine sandy loam, 4 to 8 percent slopes—30 percent
Spasprey gravelly fine sandy loam, 2 to 8 percent slopes—20 percent
Contrasting inclusions:
Haploxerolluc Durorthids, loamy, mixed, mesic, shallow, 2 to 4 percent slopes—8 percent
Xeric Torriorthents, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—7 percent

**Characteristics of the Caphor Soil**

*Classification:* Durorthic Torriorthents, coarse-loamy, mixed (calcareous), mesic
*Positions on landscape:* Fan skirts
*Parent material:* Mixed alluvium
*Slope:* 2 to 4 percent
*Elevation:* 5,800 to 6,100 feet
*Average annual precipitation:* About 7 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 120 days
*Dominant present vegetation:* Shadscale, Indian ricegrass, bottlebrush squirreltail

**Typical Profile**

*Depth:* 0 to 7 inches
*Texture:* Fine sandy loam
*Structure:* Platy
*Consistence:* Soft, very friable
*Reaction:* Moderately alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Sodicity (SAR):* 0 to 2

*Depth:* 7 to 17 inches
*Texture:* Sandy loam
*Structure:* Massive
*Consistence:* Slightly hard, very friable
*Reaction:* Strongly alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Sodicity (SAR):* 0 to 2

*Depth:* 17 to 35 inches
*Texture:* Sandy loam
*Structure:* Massive
*Consistence:* Slightly hard, friable
*Reaction:* Strongly alkaline
*Salinity:* 0 to 4 millimhos per centimeter
*Sodicity (SAR):* 2 to 10

*Depth:* 35 to 60 inches
*Texture:* Gravely coarse sand
*Structure:* Single grain
*Consistence:* Loose
*Reaction:* Strongly alkaline
*Salinity:* 0 to 4 millimhos per centimeter
*Sodicity (SAR):* 0 to 5

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderately slow over very rapid
*Available water capacity:* 4.0 to 5.5 inches
*Water-supplying capacity:* 7 inches
*Runoff:* Slow

*Hydrologic group:* B
*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—3
*Hazard of erosion:* By water—slight; by wind—severe
*Shrink-swell potential:* Low
*Corrosivity:* To steel—high; to concrete—low
*Potential for frost action:* Low

**Characteristics of the Tenabo Soil**

*Classification:* Typic Nodurargids, loamy, mixed, mesic, shallow
*Positions on landscape:* The lower summits of fan piedmont remnants
*Parent material:* Thin loess mantle that is high in content of volcanic ash over mixed alluvium
*Slope:* 4 to 8 percent
*Elevation:* 5,800 to 6,100 feet
*Average annual precipitation:* About 7 inches
*Average annual air temperature:* About 48 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Shadscale, bud sagebrush, Indian ricegrass

**Typical Profile**

*Rock fragments on surface:* 50 percent pebbles
*Depth:* 0 to 4 inches
*Texture:* Very gravelly fine sandy loam
*Structure:* Platy
*Consistence:* Slightly hard, very friable
*Reaction:* Moderately alkaline
*Salinity:* 2 to 4 millimhos per centimeter
*Sodicity (SAR):* 0 to 5

*Depth:* 4 to 15 inches
*Texture:* Clay loam, gravelly clay loam, silty clay loam
*Structure:* Prismatic
*Consistence:* Hard, friable
*Reaction:* Strongly alkaline
*Salinity:* 2 to 4 millimhos per centimeter
*Sodicity (SAR):* 13 to 25

*Depth:* 15 to 28 inches
*Kind of material:* Indurated hardpan
*Structure:* Platy
*Consistence:* Extremely hard, extremely firm
*Depth:* 28 to 60 inches
*Texture:* Stratified very gravelly sandy loam to extremely gravelly coarse sand
*Structure:* Single grain
*Consistence:* Loose
*Reaction:* Strongly alkaline
*Salinity:* 4 to 8 millimhos per centimeter
*Sodicity (SAR):* 13 to 25

**Soil and Water Features**

*Depth to the hardpan:* 9 to 20 inches
**Characteristics of the Spasprey Soil**

**Classification:** Haploxerolic Durargids, fine-loamy, mixed, mesic  
**Positions on landscape:** The upper summits of fan piedmont remnants  
**Parent material:** Mixed alluvium  
**Slope:** 2 to 8 percent  
**Elevation:** 5,800 to 6,100 feet  
**Average annual precipitation:** About 8 inches  
**Average annual air temperature:** About 49 degrees F  
**Frost-free season:** About 110 days  
**Dominant present vegetation:** Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush  

**Typical Profile**

**Rock fragments on surface:** 30 percent pebbles  
**Depth:** 0 to 5 inches  
**Texture:** Gravelly fine sandy loam  
**Structure:** Platy  
**Consistence:** Slightly hard, very friable  
**Reaction:** Neutral  
**Salinity:** 0 to 2 millimhos per centimeter  
**Sodicity (SAR):** 0 to 2  
**Depth:** 5 to 26 inches  
**Texture:** Clay loam, sandy clay loam  
**Structure:** Prismatic  
**Consistence:** Hard, friable  
**Reaction:** Mildly alkaline  
**Salinity:** 0 to 2 millimhos per centimeter  
**Sodicity (SAR):** 0 to 2  
**Depth:** 26 to 33 inches  
**Texture:** Cemented hardpan  
**Depth:** 33 to 60 inches  
**Texture:** Fine sandy loam  
**Structure:** Massive  
**Consistence:** Hard, friable  
**Reaction:** Moderately alkaline  
**Salinity:** 0 to 4 millimhos per centimeter  

**Sodicity (SAR):** 0 to 5

**Soil and Water Features**

**Depth to the hardpan:** 20 to 30 inches  
**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Moderately slow  
**Available water capacity:** 2.0 to 2.5 inches  
**Water-supplying capacity:** 7 inches  
**Runoff:** Medium  
**Hydrologic group:** D  
**Erosion factors (upper layer):** K value—0.15; T value—1; wind erodibility group—5  
**Hazard of erosion:** By water—slight; by wind—slight  
**Shrink-swell potential:** Moderate  
**Corrosivity:** To steel—high; to concrete—moderate  
**Potential for frost action:** Low  

**Contrasting Inclusions**

**Inclusion 1**

**Classification:** Haploxerolic Durorthids, loamy, mixed, mesic, shallow  
**Positions on landscape:** The highest parts of fan piedmont remnants  
**Distinctive present vegetation:** Wyoming big sagebrush  

**Inclusion 2**

**Classification:** Xeric Torriorthents, loamy-skeletal, mixed, mesic  
**Positions on landscape:** Inset fans  
**Distinctive present vegetation:** Spiny hopsage, Wyoming big sagebrush  

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Caphor Soil**

Wild herbaceous plants (nonirrigated): Poor  
Shrubs (nonirrigated): Poor

**Tenabo Soil**

Wild herbaceous plants (nonirrigated): Very poor  
Shrubs (nonirrigated): Very poor

**Spasprey Soil**

Wild herbaceous plants (nonirrigated): Fair  
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Caphor Soil**

Range seeding: Poor—too arid  
Roadfill: Good  
Topsoil: Poor—small stones, area reclaim  
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Tenabo Soil
Range seeding: Poor—too arid, droughty, excess sodium
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, small stones, too sandy
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess sodium, excess salt
Sand: Probable source
Gravel: Probable source

Spasprey Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—cemented pan, area reclaim, too clayey
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—shrink-swell, low strength, frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Caphor soil—IIIc, irrigated, and VIc, nonirrigated; Tenabo soil—IVs, irrigated, and VIIs, nonirrigated; Spasprey soil—IIIc, irrigated, and VIIc, nonirrigated
Range site: Caphor and Tenabo soils—028B017N; Spasprey soil—028B010N; Inclusion 1—028B010N; Inclusion 2—028B052N

3252—Caphor-Batan-Unsel association
Positions on landscape: Piedmont slopes, alluvial flats

Composition
Major components:
Caphor fine sandy loam, 0 to 2 percent slopes—45 percent
Batan silt loam, 0 to 2 percent slopes—25 percent
Unsel gravelly fine sandy loam, 0 to 2 percent slopes—20 percent
Contrasting inclusions:
Cremon silt loam, strongly saline-sodic, 0 to 2 percent slopes—5 percent
Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

Characteristics of the Caphor Soil
Classification: Durorthic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Fan skirts
Parent material: Mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, Indian ricegrass, bottlebrush squirreltail

Typical Profile
Depth: 0 to 7 inches
Texture: Fine sandy loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 10
Depth: 7 to 17 inches
Texture: Sandy loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 17 to 35 inches
Texture: Sandy loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 4 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46
Depth: 35 to 60 inches
Texture: Gravelly coarse sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 2 to 8 millimhos per centimeter
Sodicity (SAR): 2 to 13

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow over very rapid
Available water capacity: 4 to 6 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Batan Soil
Classification: Durorthic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants
Parent material: Silt loam that is high in content of loess and pyroclastic material
Slope: 0 to 2 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Typical Profile
Depth: 0 to 5 inches
Texture: Silt loam
Structure: Platy
Consistence: Hard, very friable
Reaction: Strongly alkaline
Salinity: 20 to 40 millimhos per centimeter
Sodicity (SAR): 46 to 60
Depth: 5 to 68 inches
Texture: Stratified silt loam to silty clay loam
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 25 to 46

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.55; T value—5;
wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe

Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Unsel Soil
Classification: Duric Haplargids, fine-loamy, mixed
Positions on landscape: Nonburied fan piedmont remnants
Parent material: Mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 51 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Shadscale, Bailey greasewood, bottlebrush squirreltail

Typical Profile
Rock fragments on surface: 80 percent pebbles
Depth: 0 to 8 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 8 to 18 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 18 to 31 inches
Texture: Gravelly sandy clay loam
Structure: Subangular blocky
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 31 to 60 inches
Texture: Very gravelly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 13 to 25

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.20; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

**Contrasting Inclusions**

**Inclusion 1**
Classification: Duric Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Outer margins of fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush

**Inclusion 2**
Classification: Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Positions on landscape: Alluvial flats
Distinctive present vegetation: Basin wildrye, black greasewood, basin big sagebrush

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Caphor Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Batan Soil**
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

**Unsel Soil**
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

**Suitability and Limitations for Selected Uses**

**Caphor Soil**
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess salt
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

**Batan Soil**
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Unsel Soil**
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

**Restrictive Features for Selected Practices**

**Batan Soil**
Drainage: Deep to water
Irrigation: Excess salt, excess sodium
Terraces and diversions: Erodes easily

**Interpretive Groups**

Land capability classification: Caphor soil—Ills, irrigated, and Vlls, nonirrigated; Batan soil—Vlls, nonirrigated; Unsel soil—Ills, irrigated, and Vllc, nonirrigated
Range site: Caphor and Batan soils—024X003N; Unsel soil—029X017N; Inclusion 1—024X003N; Inclusion 2—024X006N

**3253—Caphor association**

**Positions on landscape:** Fan skirts

**Composition**

Major components:
Caphor gravelly fine sandy loam, 0 to 2 percent slopes—65 percent
Caphor fine sandy loam, moderately saline, 0 to 2 percent slopes—25 percent

Contrasting inclusions:
Duric Camborthids, coarse-loamy, mixed, mesic, 0 to 4 percent slopes—5 percent
Duric Camborthids, coarse-loamy, mixed, mesic, 0 to 4 percent slopes—5 percent

**Characteristics of the Caphor Soil**

*Classification*: Durothridic Torriorthents, coarse-loamy, mixed (calcareous), mesic  
*Positions on landscape*: The upper fan skirts  
*Parent material*: Mixed alluvium  
*Slope*: 0 to 2 percent  
*Elevation*: 5,600 to 5,800 feet  
*Average annual precipitation*: About 7 inches  
*Average annual air temperature*: About 49 degrees F  
*Frost-free season*: About 120 days  
*Dominant present vegetation*: Shadscale, Indian ricegrass, bottlebrush squirreltail  

**Typical Profile**  
*Depth*: 0 to 7 inches  
*Texture*: Gravelly fine sandy loam  
*Structure*: Platy  
*Consistency*: Soft, very friable  
*Reaction*: Moderately alkaline  
*Salinity*: 0 to 2 millimhos per centimeter  
*Sodicity (SAR)*: 0 to 2  

*Depth*: 7 to 17 inches  
*Texture*: Sandy loam  
*Structure*: Massive  
*Consistency*: Slightly hard, very friable  
*Reaction*: Strongly alkaline  
*Salinity*: 0 to 2 millimhos per centimeter  
*Sodicity (SAR)*: 0 to 2  

*Depth*: 17 to 35 inches  
*Texture*: Sandy loam  
*Structure*: Massive  
*Consistency*: Slightly hard, friable  
*Reaction*: Strongly alkaline  
*Salinity*: 0 to 4 millimhos per centimeter  
*Sodicity (SAR)*: 2 to 10  

*Depth*: 35 to 60 inches  
*Texture*: Gravelly coarse sand  
*Structure*: Single grain  
*Consistency*: Loose  
*Reaction*: Strongly alkaline  
*Salinity*: 0 to 4 millimhos per centimeter  
*Sodicity (SAR)*: 0 to 5  

**Soil and Water Features**  
*Depth to a seasonal high water table*: More than 60 inches  
*Frequency of flooding*: None  
*Permeability*: Moderately slow over very rapid  
*Available water capacity*: 3.7 to 5.5 inches  
*Water-supplying capacity*: 7 inches  
*Runoff*: Slow  
*Hydrologic group*: B  
*Erosion factors (upper layer)*: K value—0.15; T value—5; wind erodibility group—4  
*Hazard of erosion*: By water—slight; by wind—severe  
*Shrink-swell potential*: Low  
*Corrosivity*: To steel—high; to concrete—low  
*Potential for frost action*: Low  

**Characteristics of the Caphor Soil, Moderately Saline**

*Classification*: Durothridic Torriorthents, coarse-loamy, mixed (calcareous), mesic  
*Positions on landscape*: The lower fan skirts  
*Parent material*: Mixed alluvium  
*Slope*: 0 to 2 percent  
*Elevation*: 5,600 to 5,800 feet  
*Average annual precipitation*: About 7 inches  
*Average annual air temperature*: About 49 degrees F  
*Frost-free season*: About 120 days  
*Dominant present vegetation*: Shadscale, Indian ricegrass, bottlebrush squirreltail  

**Typical Profile**  
*Depth*: 0 to 7 inches  
*Texture*: Fine sandy loam  
*Structure*: Platy  
*Consistency*: Soft, very friable  
*Reaction*: Moderately alkaline  
*Salinity*: 8 to 16 millimhos per centimeter  
*Sodicity (SAR)*: 5 to 10  

*Depth*: 7 to 17 inches  
*Texture*: Sandy loam  
*Structure*: Massive  
*Consistency*: Slightly hard, very friable  
*Reaction*: Strongly alkaline  
*Salinity*: 8 to 16 millimhos per centimeter  
*Sodicity (SAR)*: 13 to 25  

*Depth*: 17 to 35 inches  
*Texture*: Sandy loam  
*Structure*: Massive  
*Consistency*: Slightly hard, friable  
*Reaction*: Strongly alkaline  
*Salinity*: 4 to 16 millimhos per centimeter  
*Sodicity (SAR)*: 25 to 46  

*Depth*: 35 to 60 inches  
*Texture*: Gravelly coarse sand  
*Structure*: Single grain  
*Consistency*: Loose  
*Reaction*: Strongly alkaline  
*Salinity*: 2 to 8 millimhos per centimeter  
*Sodicity (SAR)*: 2 to 13
Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow over very rapid
Available water capacity: 4 to 6 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Wyoming big sagebrush, needleandthread

Inclusion 2
Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Winterfat, Indian ricegrass, shadscale

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Caphor Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Caphor Soil, Moderately Saline
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Caphor Soil
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Caphor Soil, Moderately Saline
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, area reclaim, excess salt
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups

Land capability classification: Caphor soil—IIIs, irrigated, and VIIc, nonirrigated; Caphor soil, moderately saline—IIIs, irrigated, and VIIa, nonirrigated
Range site: Caphor soil—028B017N; Caphor soil, moderately saline—028B003N; Inclusion 1—028B010N; Inclusion 2—024X014N

3270—Koyen fine sandy loam, 2 to 4 percent slopes

Positions on landscape: Fan skirts

Composition

Major component:
Koyen fine sandy loam, 2 to 4 percent slopes—90 percent
Contrasting inclusion:
Izo very gravelly loamy sand, occasionally flooded, 2 to 4 percent slopes—10 percent

Characteristics of the Koyen Soil

Classification: Typic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan skirts
Parent material: Alluvium derived from volcanic rock
Slope: 2 to 4 percent
Elevation: 5,700 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 52 degrees F
Frost-free season: About 130 days
Dominant present vegetation: Shadscale, bud sagebrush, galleta, Indian ricegrass

Typical Profile

Depth: 0 to 4 inches
Texture: Fine sandy loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Depth: 4 to 14 inches
Texture: Sandy loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Moderately alkaline

Depth: 14 to 60 inches
Texture: Gravelly sandy loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.8 to 6.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusion
Classification: Typic Torriorthents, sandy-skeletal, mixed, mesic
Positions on landscape: Narrow inset fans, adjacent to channels
Distinctive present vegetation: Spiny hopsage, burrobrush, Bailey greasewood

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses
Range seeding: Poor—too arid
Roadfill: Good
Topsoil: Fair—too sandy, small stones, area reclaim
Daily cover for landfill: Fair—too sandy, thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—thin layer
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Koyen soil—I1le, irrigated, and VIIc, nonirrigated
Range site: Koyen soil—029X017N; Inclusion—029X041N

3310—Spasprey-Allor association
Positions on landscape: Fan piedmonts

Composition
Major components:
Spasprey gravelly fine sandy loam, 2 to 4 percent slopes—50 percent
Allor gravelly loam, 2 to 8 percent slopes—35 percent

Contrasting inclusions:
Orovada fine sandy loam, 0 to 4 percent slopes—8 percent
Durothic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 15 to 30 percent slopes—4 percent
Wholan silt loam, 0 to 2 percent slopes—3 percent

Characteristics of the Spasprey Soil
Classification: Haploxerolic Durargids, fine-loamy, mixed, mesic
Positions on landscape: The upper fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 4 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 5 to 26 inches
Texture: Clay loam, sandy clay loam
Structure: Prismatic
Consistency: Hard, friable
Reaction: Mildly alkaline

Depth: 26 to 33 inches
Texture: Cemented hardpan
Consistency: Extremely hard, brittle
Depth: 33 to 60 inches
Texture: Fine sandy loam
Structure: Massive
Consistence: Hard, friable
Reaction: Moderately alkaline

Soil and Water Features

Depth to the hardpan: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.32; T value—3; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Allor Soil

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The lower fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

Rock fragments on surface: 30 percent pebbles
Depth: 0 to 12 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 12 to 34 inches
Texture: Gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 34 to 60 inches
Texture: Gravelly loamy sand, very gravelly loamy sand
Structure: Massive
Consistence: Very hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5 to 7 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1

Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2

Classification: Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, pine bluegrass

Inclusion 3

Classification: Typic Camborthids, coarse-silty, mixed, mesic
Positions on landscape: Convex fan skirts
Distinctive present vegetation: Winterfat

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Spusprey Soil

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Allor Soil

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Spusprey Soil

Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—cemented pan, area reclaim, too clayey
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—shrink-swell, low
strength, frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage,
piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Allor Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, shrink-
swell
Pond reservoir areas: Moderate—seepage, slope
Embarkments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Spasprey soil—Ills,
irrigated, and VIs, nonirrigated; Allor soil—Illc,
irrigated, and Vllc, nonirrigated
Range site: Spasprey and Allor soils—028B010N;
Inclusion 1—028B010N; Inclusion 2—027X008N;
Inclusion 3—024X004N

3312—Spasprey-Buffaran-Orovada
association

Positions on landscape: Fan piedmonts

Composition

Major components:
Spasprey gravelly fine sandy loam, 0 to 2 percent
slopes—35 percent
Buffaran gravelly loam, 2 to 8 percent slopes—35
percent
Orovada fine sandy loam, 2 to 4 percent slopes—15
percent
Contrasting inclusions:
Durixerollic Haplargids, clayey-skeletal, montmorillonitic,
mesic, 15 to 30 percent slopes—5 percent
Xerolic Durargids, clayey-skeletal, montmorillonitic,
mesic, 4 to 15 percent slopes—5 percent
Duric Camborthids, loamy-skeletal, mixed, mesic, 15 to
30 percent slopes—5 percent

Characteristics of the Spasprey Soil
Classification: Haploxerollic Durargids, fine-loamy,
mixed, mesic

Positions on landscape: Summits of fan piedmont
remnants
Parent material: Mixed alluvium
Slope: 0 to 2 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass,
bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 5 inches
Texture: Gravely fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 5 to 26 inches
Texture: Clay loam, sandy clay loam
Structure: Prismatic
Consistence: Hard, friable
Reaction: Mildly alkaline
Depth: 26 to 33 inches
Texture: Cemented hardpan
Consistence: Extremely hard, brittle
Depth: 33 to 60 inches
Texture: Fine sandy loam
Structure: Massive
Consistence: Hard, friable
Reaction: Moderately alkaline

Soil and Water Features
Depth to the hardpan: 20 to 30 inches
Depth to a seasonal high water table: More than 60
inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.32; T value—3;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Buffaran Soil
Classification: Xerolic Durargids, clayey,
montmorillonitic, mesic, shallow
Positions on landscape: Side slopes of fan piedmont
remnants
Landers County, Nevada, South Part

Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Thurbert needlegrass, bottlebrush squirreltail, Indian ricegrass

Typical Profile
Rock fragments on surface: 15 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 5 to 16 inches
Texture: Clay, gravelly clay, gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline
Depth: 16 to 27 inches
Kind of material: Indurated hardpan
Structure: Massive
Consistency: Extremely hard, extremely firm
Depth: 27 to 60 inches
Texture: Cemented hardpan
Structure: Platy
Consistency: Very hard, very firm

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2 to 3 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.32; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Orvada Soil
Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent

Elevation: 6,200 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 10.0 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Durixerollic Haplargids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Concave, north-facing side slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Concave, higher parts on
summits of concave fan piedmont remnants
Distinctive present vegetation: Black sagebrush, Indian
ricegrass

Inclusion 3
Classification: Duric Camborthids, loamy-skeletal,
mixed, mesic
Positions on landscape: South-facing side slopes of fan
piedmont remnants
Distinctive present vegetation: Shadscale, Wyoming big
sagebrush, galleta

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Spasprey Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Buffaran Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Spasprey Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—cemented pan, area reclaim, too clayey
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—shrink-swell, low
strength, frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage,
piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Buffaran Soil
Range seeding: Poor—droughty, rooting depth
Roadfill: Poor—cemented pan, shrink-swell, low strength
Topsoil: Poor—cemented pan, too clayey, small stones
Daily cover for landfill: Poor—cemented pan, hard to
pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, shrink-
swell, low strength
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Spasprey soil—IIIa,
irrigated, and VIs, nonirrigated; Buffaran soil—VIIa,
nonirrigated; Orovada soil—Ile, irrigated, and Vlc,
nonirrigated
Range site: Spasprey, Buffaran, and Orovada soils—
028B010N; Inclusion 1—028B010N; Inclusion 2—
028B011N; Inclusion 3—024X045N

3314—Spasprey-Allor-Orovada association
Positions on landscape: Fan piedmonts

Composition
Major components:
Spasprey gravelly fine sandy loam, 4 to 8 percent
slopes—35 percent
Allor gravelly loam, 4 to 8 percent slopes—30 percent
Orovada fine sandy loam, 2 to 8 percent slopes—20
percent
Contrasting inclusions:
Pineal gravelly loam, 4 to 15 percent slopes—8
percent
Buffaran gravelly loam, 4 to 8 percent slopes—4
percent
Duric Haplargids, fine-loamy, mixed, mesic, 4 to 8
percent slopes—3 percent

Characteristics of the Spasprey Soil
Classification: Haploxerolic Durargids, fine-loamy,
mixed, mesic
Positions on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope: 4 to 8 percent
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass,
bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 5 to 26 inches
Texture: Clay loam, sandy clay loam
Structure: Prismatic
Consistence: Hard, friable
Reaction: Mildly alkaline
Depth: 26 to 33 inches
Texture: Cemented hardpan
Consistence: Extremely hard, brittle
Depth: 33 to 60 inches
Texture: Fine sandy loam
Structure: Massive
Consistence: Hard, friable
Reaction: Moderately alkaline

**Soil and Water Features**

*Depth to the hardpan:* 20 to 30 inches
*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderately slow
*Available water capacity:* 4 to 5 inches
*Water-supplying capacity:* 8 inches
*Runoff:* Slow
*Hydrologic group:* C
*Erosion factors (upper layer):* K value—0.32; T value—3; wind erodibility group—4
*Hazard of erosion:* By water—slight; by wind—severe
*Shrink-swell potential:* Moderate
*Corrosivity:* To steel—high; to concrete—low
*Potential for frost action:* Moderate

**Characteristics of the Alluvial Soil**

*Classification:* Durixerollic Haplorgids, fine-loamy, mixed, mesic
*Positions on landscape:* Fan aprons
*Parent material:* Mixed alluvium
*Slope:* 4 to 8 percent
*Elevation:* 5,500 to 6,000 feet
*Average annual precipitation:* About 9 inches
*Average annual air temperature:* About 48 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

*Rock fragments on surface:* 30 percent pebbles
*Depth:* 0 to 12 inches
*Texture:* Gravelly loam

**Structure:** Subangular blocky
*Consistence:* Soft, very friable
*Reaction:* Mildly alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Depth:* 12 to 34 inches
*Texture:* Gravelly clay loam
*Structure:* Subangular blocky
*Consistence:* Slightly hard, friable
*Reaction:* Mildly alkaline
*Salinity:* 0 to 2 millimhos per centimeter
*Depth:* 34 to 60 inches
*Texture:* Gravelly loamy sand, very gravelly loamy sand
*Structure:* Massive
*Consistence:* Very hard, firm
*Reaction:* Mildly alkaline
*Salinity:* 0 to 2 millimhos per centimeter

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderately slow
*Available water capacity:* 5.0 to 6.4 inches
*Water-supplying capacity:* 9 inches
*Runoff:* Medium
*Hydrologic group:* B
*Erosion factors (upper layer):* K value—0.24; T value—5; wind erodibility group—6
*Hazard of erosion:* By water—slight; by wind—severe
*Shrink-swell potential:* Moderate
*Corrosivity:* To steel—high; to concrete—low
*Potential for frost action:* Moderate

**Characteristics of the Orovada Soil**

*Classification:* Durixerollic Camborthids, coarse-loamy, mixed, mesic
*Positions on landscape:* Inset fans
*Parent material:* Loess mantle that is high in content of volcanic ash over mixed alluvium
*Slope:* 2 to 8 percent
*Elevation:* 5,500 to 6,000 feet
*Average annual precipitation:* About 9 inches
*Average annual air temperature:* About 48 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Wyoming big sagebrush, bluegrass, Indian ricegrass

**Typical Profile**

*Depth:* 0 to 8 inches
*Texture:* Fine sandy loam
*Structure:* Subangular blocky
*Consistence:* Slightly hard, very friable
*Reaction:* Neutral
Salinity: 0 to 2 millimhos per centimeter
Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 20 to 60 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Xerollic Durargids, clayey, montmorillonitic, mesic, shallow
Positions on landscape: The highest nonburied fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Duric Haplargids, fine-loamy, mixed, mesic
Positions on landscape: The lower parts of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Spasprey Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Allor Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Spasprey Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—cemented pan, area reclaim, too clayey
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—shrink-swell, low strength, frost action
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Allor Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, shrink-swell
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Spasprey soil—IIIe, irrigated, and VIIs, nonirrigated; Allor soil—IIE,
irrigated, and V1c, nonirrigated; Orovada soil—Ille, irrigated, and V1c, nonirrigated

Range site: Spasprey, Allor, and Orovada soils—
028B010N; Inclusion 1—028B010N; Inclusion 2—
028B010N; Inclusion 3—024X002N

3341—Halacan-Hatur-Rock outcrop association

Positions on landscape: Mountains

Composition

Major components:
Halacan very gravelly loam, 30 to 50 percent slopes—40 percent
Hatur gravelly loam, 30 to 50 percent slopes—30 percent
Rock outcrop—15 percent

Contrasting inclusions:
Cryic Lithic Rendolls, loamy-skeletal, carbonatic, 4 to 15 percent slopes—9 percent
Pachic Cryoborolls, loamy-skeletal, mixed, 4 to 15 percent slopes—6 percent

Characteristics of the Halacan Soil

Classification: Cryic Lithic Rendolls, loamy-skeletal, carbonatic
Positions on landscape: Smooth to convex side slopes and shoulder slopes of mountains
Parent material: Residuum and colluvium derived from limestone

Slope: 30 to 50 percent
Elevation: 8,200 to 9,400 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 38 degrees F
Frost-free season: About 40 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush, serviceberry

Typical Profile

Rock fragments on surface: 50 percent pebbles

Depth: 0 to 5 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Moderately alkaline

Depth: 5 to 17 inches
Texture: Extremely channery loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline

Depth: 17 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1 to 2 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1;
wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Hatur Soil

Classification: Cryic Rendolls, loamy-skeletal, carbonatic
Positions on landscape: East- and south-facing, slightly concave side slopes of mountains
Parent material: Colluvium and residuum derived from limestone

Slope: 30 to 50 percent
Elevation: 8,200 to 9,400 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 60 days
Dominant present vegetation: Idaho fescue, mountain brome, needlegrass, mountain big sagebrush

Typical Profile

Rock fragments on surface: 90 percent pebbles

Depth: 0 to 14 inches
Texture: Gravelly loam
Structure: Granular
Consistence: Soft, very friable
Reaction: Moderately alkaline

Depth: 14 to 29 inches
Texture: Extremely gravelly loam, extremely gravelly sandy loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Moderately alkaline

Depth: 29 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.5 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.20; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Rock Outcrop**

*Positions on landscape:* Scattered peaks and limestone ledges
*Dominant present vegetation:* None

**Contrasting Inclusions**

**Inclusion 1**
*Classification:* Cryic Lithic Rendolls, loamy-skeletal, carbonatic
*Positions on landscape:* Crests of mountains
*Distinctive present vegetation:* Black sagebrush, Idaho fescue

**Inclusion 2**
*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed
*Positions on landscape:* Intermountain drainageways
*Distinctive present vegetation:* Basin big sagebrush, basin wildrye

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Halacan Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Hatur Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses**

**Halacan Soil**
*Range seeding:* Poor—droughty, small stones
*Roadfill:* Poor—depth to rock, slope
*Topsoil:* Poor—depth to rock, small stones, slope
*Daily cover for landfill:* Poor—depth to rock, small stones, slope
*Shallow excavations:* Severe—depth to rock, slope
*Local roads and streets:* Severe—depth to rock, slope
*Pond reservoir areas:* Severe—depth to rock, slope
*Embankments, dikes, and levees:* Severe—seepage, large stones
*Sand:* Improbable source—excess fines, large stones
*Gravel:* Improbable source—excess fines, large stones

**Hatur Soil**
*Range seeding:* Poor—erodes easily
*Roadfill:* Poor—depth to rock, slope
*Topsoil:* Poor—small stones, slope
*Daily cover for landfill:* Poor—depth to rock, seepage, small stones
*Shallow excavations:* Severe—depth to rock, slope
*Local roads and streets:* Severe—slope
*Pond reservoir areas:* Severe—slope
*Embankments, dikes, and levees:* Severe—seepage
*Sand:* Improbable source—small stones
*Gravel:* Improbable source—thin layer

**Interpretive Groups**

*Land capability classification:* Halacan soil—VIIa, nonirrigated; Hatur soil—VIIe, nonirrigated; Rock outcrop—VIIa, nonirrigated
*Range site:* Halacan soil—024X016N; Hatur soil—028B029N; Rock outcrop—none; Inclusion 1—024X042N; Inclusion 2—028B024N

**3342—Halacan-Hapgood-Granzan association**

*Positions on landscape:* Mountains

**Composition**

*Major components:* Halacan very gravelly loam, 30 to 50 percent slopes—35 percent
Hapgood gravelly loam, 30 to 50 percent slopes—25 percent
Granzan very cobbly loam, 30 to 50 percent slopes—25 percent

*Contrasting inclusions:* Cryic Lithic Rendolls, loamy-skeletal, carbonatic, 4 to 15 percent slopes—6 percent
Rock outcrop—5 percent
Pachic Cryoborolls, loamy-skeletal, mixed, 15 to 50 percent slopes—3 percent
Rubble land—1 percent

**Characteristics of the Halacan Soil**

*Classification:* Cryic Lithic Rendolls, loamy-skeletal, carbonatic
*Positions on landscape:* Smooth to convex, broad shoulder slopes of mountains
*Parent material:* Residuum and colluvium derived from limestone
*Slope:* 30 to 50 percent
*Elevation:* 7,800 to 9,000 feet
*Average annual precipitation:* About 16 inches
*Average annual air temperature:* About 38 degrees F
Frost-free season: About 40 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

Typical Profile
Rock fragments on surface: 50 percent pebbles
Depth: 0 to 5 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistency: Soft, very friable
Reaction: Moderately alkaline

Depth: 5 to 17 inches
Texture: Extremely channery loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline

Depth: 17 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1 to 2 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Hapgood Soil
Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Concave side slopes of mountains
Parent material: Colluvium that includes loess and volcanic ash
Slope: 30 to 50 percent
Elevation: 7,800 to 9,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Needlegrass, mountain brome, bluegrass, mountain big sagebrush, serviceberry

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 17 to 40 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 40 to 60 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Neutral

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.4 inches
Water-supplying capacity: 16 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Granza Soils
Classification: Tropic Calcixerolls, loamy-skeletal, carbonatic, frigid
Positions on landscape: Convex, south-facing side slopes of mountains
Parent material: Colluvium and residuum derived from calcareous shale and limestone
Slope: 30 to 50 percent
Elevation: 7,800 to 9,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Bluebunch wheatgrass, mountain big sagebrush, needlegrass, snowberry

Typical Profile
Rock fragments on surface: 35 percent cobbles, 35 percent pebbles
Depth: 0 to 12 inches
Texture: Very cobbly loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Depth: 12 to 43 inches  
Texture: Very gravelly loam, very gravelly silt loam  
Structure: Massive  
Consistency: Soft, very friable  
Reaction: Moderately alkaline  
Depth: 43 inches  
Kind of material: Unweathered bedrock  

**Soil and Water Features**  
Depth to bedrock: 40 to 60 inches  
Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Moderate  
Available water capacity: 5 to 7 inches  
Water-supplying capacity: 12 inches  
Runoff: Rapid  
Hydrologic group: B  
Erosion factors (upper layer): K value—0.17; T value—3; wind erodibility group—7  
Hazard of erosion: By water—moderate; by wind—slight  
Shrink-swell potential: Low  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Moderate  

**Contrasting Inclusions**  
**Inclusion 1**  
Classification: Cryic Lithic Rendolls, loamy-skeletal, carbonatic  
Positions on landscape: Protected crests and shoulder slopes of mountains  
Distinctive present vegetation: Black sagebrush, bluegrass, Idaho fescue  

**Inclusion 2**  
Positions on landscape: Rims, severely eroded areas  
Distinctive present vegetation: None  

**Inclusion 3**  
Classification: Pachic Cryoborolls, loamy-skeletal, mixed  
Positions on landscape: Windswept crests and nose slopes of mountains  
Distinctive present vegetation: Low sagebrush, bluegrass  

**Inclusion 4**  
Positions on landscape: Below areas of Rock outcrop  
Distinctive present vegetation: None  

**Major Current Uses**  
Livestock grazing, wildlife habitat  

**Suitability for Wildlife Habitat Elements**  
**Halacan Soil**  
Wild herbaceous plants (nonirrigated): Fair  
Shrubs (nonirrigated): Fair  

**Granzaon Soil**  
Wild herbaceous plants (nonirrigated): Fair  
Shrubs (nonirrigated): Fair  

**Suitability and Limitations for Selected Uses**  
**Halacan Soil**  
Range seeding: Poor—droughty, small stones  
Roadfill: Poor—depth to rock, slope  
Topsoil: Poor—depth to rock, small stones, slope  
Daily cover for landfill: Poor—depth to rock, small stones, slope  
Shallow excavations: Severe—depth to rock, slope  
Local roads and streets: Severe—depth to rock, slope  
Pond reservoir areas: Severe—depth to rock, slope  
Embankments, dikes, and levees: Severe—seepage, large stones  
Sand: Improbable source—excess fines, large stones  
Gravel: Improbable source—excess fines, large stones  

**Hapgood Soil**  
Range seeding: Poor—erodes easily  
Roadfill: Poor—slope  
Topsoil: Poor—small stones, area reclaim, slope  
Daily cover for landfill: Poor—small stones, slope  
Shallow excavations: Severe—slope  
Local roads and streets: Severe—slope  
Pond reservoir areas: Severe—slope  
Embankments, dikes, and levees: Moderate—large stones  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines  

**Granzaon Soil**  
Range seeding: Poor—large stones  
Roadfill: Poor—slope  
Topsoil: Poor—small stones, area reclaim, slope  
Daily cover for landfill: Poor—small stones, slope  
Shallow excavations: Severe—slope  
Local roads and streets: Severe—slope  
Pond reservoir areas: Severe—slope  
Embankments, dikes, and levees: Moderate—thin layer, large stones  
Sand: Improbable source—excess fines  
Gravel: Improbable source—excess fines  

**Interpretive Groups**  
Land capability classification: Halacan and Granzaon soils—VIIa, nonirrigated; Hapgood soil—VIIe, nonirrigated  
Range site: Halacan soil—024X016N; Hapgood soil—024X032N; Granzaon soil—028B027N; Inclusion 1—024X042N; Inclusion 2—none; Inclusion 3—025X028N; Inclusion 4—none
3411—Zoesta-Robson-Softscrabble association

*Positions on landscape*: Mountains

**Composition**

- **Major components**:
  - Zoesta cobbly loam, 15 to 30 percent slopes—40 percent
  - Robson very cobbly loam, 15 to 30 percent slopes—25 percent
  - Softscrabble very cobbly loam, 15 to 50 percent slopes—20 percent

- **Contrasting inclusions**:
  - Pachic Haploxerolls, loamy-skeletal, mixed, frigid, 2 to 8 percent slopes—5 percent
  - Aridic Argixerolls, fine-loamy, mixed, frigid, 15 to 50 percent slopes—5 percent
  - Rock outcrop—4 percent
  - Cleavage very gravelly loam, 8 to 15 percent slopes—1 percent

**Characteristics of the Zoesta Soil**

- **Classification**: Xerolic Paleargids, fine, montmorillonitic, frigid
- **Positions on landscape**: The lower side slopes of mountains
- **Parent material**: Colluvium derived from various kinds of rock
- **Slope**: 15 to 30 percent
- **Elevation**: 6,400 to 7,600 feet
- **Average annual precipitation**: About 10 inches
- **Average annual air temperature**: About 45 degrees F
- **Frost-free season**: About 100 days
- **Dominant present vegetation**: Bluebunch wheatgrass, needlegrass, low sagebrush

**Typical Profile**

- **Rock fragments on surface**: 15 percent cobbles, 20 percent pebbles
- **Depth**: 0 to 7 inches
  - **Texture**: Cobbly loam
  - **Structure**: Platy
  - **Consistence**: Slightly hard, very friable
  - **Reaction**: Neutral
- **Depth**: 7 to 23 inches
  - **Texture**: Clay
  - **Structure**: Prismatic
  - **Consistence**: Very hard, very firm
  - **Reaction**: Mildly alkaline
- **Depth**: 23 to 31 inches
  - **Texture**: Gravelly clay, gravelly clay loam
  - **Structure**: Prismatic
  - **Consistence**: Very hard, very firm
  - **Reaction**: Moderately alkaline

**Depth**: 31 to 60 inches

- **Texture**: Very gravelly loam, very gravelly clay loam
- **Structure**: Massive
- **Consistence**: Very hard, very firm
- **Reaction**: Moderately alkaline

**Soil and Water Features**

- **Depth to a seasonal high water table**: More than 60 inches
- **Frequency of flooding**: None
- **Permeability**: Very slow
- **Available water capacity**: 9 to 11 inches
- **Water-supplying capacity**: 12 inches
- **Runoff**: Rapid
- **Hydrologic group**: D
- **Erosion factors** (upper layer): K value—0.20; T value—1; wind erodibility group—6
- **Hazard of erosion**: By water—moderate; by wind—slight
- **Shrink-swell potential**: High
- **Corrosivity**: To steel—high; to concrete—low
- **Potential for frost action**: Low

**Characteristics of the Robson Soil**

- **Classification**: Lithic Xerolic Haplorgids, clayey-skeletal, montmorillonitic, frigid
- **Positions on landscape**: Shoulder slopes of mountains
- **Parent material**: Residuum derived from siliceous tuff, rhyolite, and andesite
- **Slope**: 15 to 30 percent
- **Elevation**: 6,600 to 8,000 feet
- **Average annual precipitation**: About 12 inches
- **Average annual air temperature**: About 44 degrees F
- **Frost-free season**: About 90 days
- **Dominant present vegetation**: Low sagebrush, Sandberg bluegrass

**Typical Profile**

- **Rock fragments on surface**: 50 percent cobbles and stones, 30 percent pebbles
- **Depth**: 0 to 2 inches
  - **Texture**: Very cobbly loam
  - **Structure**: Platy
  - **Consistence**: Soft, very friable
  - **Reaction**: Neutral
  - **Salinity**: 0 to 1 millimho per centimeter
- **Depth**: 2 to 5 inches
  - **Texture**: Very cobbly clay loam
  - **Structure**: Subangular blocky
  - **Consistence**: Slightly hard, friable
  - **Reaction**: Mildly alkaline
  - **Salinity**: 0 to 1 millimho per centimeter
- **Depth**: 5 to 15 inches
  - **Texture**: Very cobbly clay, extremely cobbly clay
  - **Structure**: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 1 millimho per centimeter
Depth: 15 inches
Kind of material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 0.6 to 1.2 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1;
wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

**Characteristics of the Softscrabble Soil**

Classification: Pachic Argixerolls, loamy-skeletal, mixed,
frigid
Positions on landscape: Concave side slopes of
mountains
Parent material: Colluvium and residuum derived from
volcanic rock
Slope: 15 to 50 percent
Elevation: 6,400 to 8,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch
wheatgrass, mountain big sagebrush, snowberry

**Typical Profile**

Rock fragments on surface: 25 percent cobbles, 30 percent pebbles
Depth: 0 to 16 inches
Texture: Very cobbly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 16 to 30 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral
Depth: 30 to 60 inches
Texture: Very gravelly clay loam
Structure: Angular blocky

Con sistence: Hard, friable
Reaction: Neutral

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6 to 8 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.15; T value—5;
wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

**Contrasting Inclusions**

**Inclusion 1**
Classification: Pachic Haploxerolls, loamy-skeletal,
mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Rose, basin big sagebrush, bluegrass

**Inclusion 2**
Classification: Aridic Argixerolls, fine-loamy, mixed, frigid
Positions on landscape: Convex, north-facing nose slopes of mountains
Distinctive present vegetation: Low sagebrush, Idaho fescue

**Inclusion 3**
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

**Inclusion 4**
Classification: Lithic Argixerolls, loamy-skeletal, mixed,
frigid
Positions on landscape: Crests of mountains
Distinctive present vegetation: Low sagebrush, black sagebrush, bluegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Zoesta Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Robson Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Softscrabble Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Zoesta Soil**
- **Range seeding**: Poor—rooting depth
- **Roadfill**: Fair—shrink-swell, slope
- **Topsoil**: Poor—small stones, area reclaim, slope
- **Daily cover for landfill**: Poor—small stones, slope
- **Shallow excavations**: Severe—slope
- **Local roads and streets**: Severe—low strength, shrink-swell, slope
- **Pond reservoir areas**: Severe—slope
- **Embankments, dikes, and levees**: Slight
- **Sand**: Improbable source—excess fines
- **Gravel**: Improbable source—excess fines

**Robson Soil**
- **Range seeding**: Poor—droughty, large stones
- **Roadfill**: Poor—depth to rock, large stones
- **Topsoil**: Poor—depth to rock, small stones, slope
- **Daily cover for landfill**: Poor—depth to rock, large stones, slope
- **Shallow excavations**: Severe—depth to rock, large stones, slope
- **Local roads and streets**: Severe—depth to rock, large stones, slope
- **Pond reservoir areas**: Severe—depth to rock, slope
- **Embankments, dikes, and levees**: Severe—large stones
- **Sand**: Improbable source—excess fines, large stones
- **Gravel**: Improbable source—excess fines, large stones

**Softscrabble Soil**
- **Range seeding**: Poor—large stones
- **Roadfill**: Poor—slope
- **Topsoil**: Poor—small stones, area reclaim, slope
- **Daily cover for landfill**: Poor—small stones, slope
- **Shallow excavations**: Severe—slope
- **Local roads and streets**: Severe—slope
- **Pond reservoir areas**: Severe—slope
- **Embankments, dikes, and levees**: Severe—large stones
- **Sand**: Improbable source—excess fines
- **Gravel**: Improbable source—excess fines

**Interpretive Groups**
- **Land capability classification**: Zoesta soil—VIs, nonirrigated; Robson and Softscrabble soils—VIIIs, nonirrigated
- **Range site**: Zoesta and Robson soils—02X018N; Softscrabble soil—02X021N; Inclusion 1—028B024N; Inclusion 2—02X027N; Inclusion 3—none; Inclusion 4—02X016N

**3415—Zoesta-Handy association**
- **Positions on landscape**: Mountain valley fans

**Composition**
- **Major components**: Zoesta cobbly loam, 8 to 15 percent slopes—50 percent
  - Handy gravelly loam, 15 to 30 percent slopes, extremely stony—35 percent
- **Contrasting inclusions**: Aridic Durixeroll, loamy-skeletal, mixed, frigid, 15 to 30 percent slopes—6 percent
  - Aridic Haploxerolls, loamy-skeletal, mixed, frigid, 4 to 15 percent slopes—5 percent
  - Durixeroll Hapludands, fine, montmorillonitic, frigid, 15 to 30 percent slopes—4 percent

**Characteristics of the Zoesta Soil**
- **Classification**: Xerolic Paleargids, fine, montmorillonitic, frigid
- **Positions on landscape**: Convex mountain valley fan remnants
- **Parent material**: Alluvium derived from various kinds of rock
- **Slope**: 8 to 15 percent
- **Elevation**: 6,300 to 7,000 feet
- **Average annual precipitation**: About 10 inches
- **Average annual air temperature**: About 45 degrees F
- **Frost-free season**: About 100 days
- **Dominant present vegetation**: Bluebunch wheatgrass, needlegrass, low sagebrush

**Typical Profile**
- **Rock fragments on surface**: 15 percent cobbles, 15 percent pebbles
- **Depth**: 0 to 7 inches
- **Texture**: Cobbly loam
- **Structure**: Platy
- **Consistence**: Slightly hard, very friable
- **Reaction**: Neutral
- **Depth**: 7 to 23 inches
- **Texture**: Clay
- **Structure**: Prismatic
- **Consistence**: Very hard, very firm
- **Reaction**: Mildly alkaline
- **Depth**: 23 to 31 inches
- **Texture**: Gravelly clay, gravelly clay loam
- **Structure**: Prismatic
- **Consistence**: Very hard, very firm
- **Reaction**: Moderately alkaline
- **Depth**: 31 to 60 inches
- **Texture**: Very gravelly loam, very gravelly clay loam
- **Structure**: Massive
- **Consistence**: Very hard, very firm
- **Reaction**: Moderately alkaline
Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 9 to 11 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Handy Soil

Classification: Xerollic Hapludalfs, fine, montmorillonitic, frigid
Positions on landscape: Convex side slopes of mountain valley fans
Parent material: Alluvium and colluvium derived from various kinds of rock
Slope: 15 to 30 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Indian ricegrass, needlegrass, western wheatgrass, big sagebrush

Typical Profile

Rock fragments on surface: 10 percent stones, 30 percent pebbles
Depth: 0 to 4 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 4 to 30 inches
Texture: Clay, gravelly clay
Structure: Prismatic
Consistence: Very hard, very firm
Reaction: Moderately alkaline
Depth: 30 to 60 inches
Texture: Gravelly loam to very gravelly loamy sand
Structure: Massive
Consistence: Hard, firm
Reaction: Moderately alkaline

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 8 to 10 inches
Water-supplying capacity: 11 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.20; T value—5;
wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Aridic Duric Haploxerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Convex inset fan remnants
Distinctive present vegetation: Mountain big sagebrush, gray rabbitbrush

Inclusion 2
Classification: Aridic Haploxerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave inset fans
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 3
Classification: Durixerollic Hapludalfs, fine, montmorillonitic, frigid
Positions on landscape: Convex, lower side slopes of mountain valley fan remnants
Distinctive present vegetation: Big sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Zoesta Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Handy Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Zoesta Soil
Range seeding: Poor—rooting depth
Roadfill: Fair—shrink-swell
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Slight
Land capability classification: Zoesta soil—IVs, irrigated, and VIIc, nonirrigated; Handy soil—VIIc, nonirrigated

Range site: Zoesta soil—024X018N; Handy soil—025X014N; Inclusion 1—025X014N; Inclusion 2—025X003N; Inclusion 3—024X018N

3417—Zoesta-Roca-Softscrabble association

Positions on landscape: Mountains

Composition

Major components:
Zoesta cobbly loam, 8 to 15 percent slopes—40 percent
Roca very cobbly loam, 15 to 50 percent slopes—30 percent
Softscrabble gravelly loam, 15 to 30 percent slopes—15 percent
Contrasting inclusions:
Cumulic Haplouquolls, fine-loamy, mixed, frigid, drained, 4 to 8 percent slopes—8 percent
Lithic Xerolic Haplorgids, loamy-skeletal, mixed, frigid, 4 to 8 percent slopes—4 percent
Robson gravelly loam, 2 to 4 percent slopes—3 percent

Characteristics of the Zoesta Soil

Classification: Xerolic Paleargids, fine, montmorillonitic, frigid

Positions on landscape: Convex foot slopes of mountains

Parent material: Colluvium derived from various kinds of rock

Slope: 8 to 15 percent
Elevation: 6,500 to 7,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days

Dominant present vegetation: Bluebunch wheatgrass, needlegrass, low sagebrush

Typical Profile

Rock fragments on surface: 15 percent cobbles, 15 percent pebbles
Depth: 0 to 7 inches
Texture: Cobbly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 7 to 23 inches
Texture: Clay
Structure: Prismatic
Consistence: Very hard, very firm
Reaction: Moderately alkaline

Depth: 23 to 31 inches
Texture: Gravelly clay, gravelly clay loam
Structure: Prismatic
Consistence: Very hard, very firm
Reaction: Moderately alkaline

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 9 to 11 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D

Erosion factors (upper layer): K value—0.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Roca Soil

Classification: Xerolic Haplorgids, clayey-skeletal, montmorillonitic, frigid

Positions on landscape: South-facing side slopes of mountains

Parent material: Residuum derived from shale and chert
Slope: 15 to 50 percent
Elevation: 6,500 to 7,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Bluegrass, bluebunch wheatgrass, big sagebrush

Typical Profile

Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 4 inches
Texture: Very cobbly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Depth: 4 to 24 inches
Texture: Very gravelly clay loam, very gravelly clay
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 24 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.6 to 4.5 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—2;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Softscrabble Soil

Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: North-facing side slopes of mountains
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 6,500 to 7,400 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

Typical Profile

Rock fragments on surface: 5 percent cobbles, 20 percent pebbles
Depth: 0 to 16 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 16 to 30 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral
Depth: 30 to 60 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 7.8 to 9.2 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.20; T value—5;
wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Cumulic Haplauquolls, fine-loamy, mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 2
Classification: Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid
Positions on landscape: The higher crests of mountains
Distinctive present vegetation: Big sagebrush, bluebunch wheatgrass

Inclusion 3
Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: The lower crests of mountains
Lander County, Nevada, South Part

Distinctive present vegetation: Low sagebrush, bluegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Zoesta Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Roca Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Softscramble Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Zoesta Soil
Range seeding: Poor—rooting depth
Roadfill: Fair—shrink-swell
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Roca Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Softscramble Soil
Range seeding: Fair—small stones
Roadfill: Fair—large stones, slope, shrink-swell
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Zoesta soil—IVs, irrigated, and VIIIs, nonirrigated; Roca soil—VIIIs, nonirrigated; Softscramble soil—VIle, nonirrigated
Range site: Zoesta soil—024X018N; Roca soil—024X028N; Softscramble soil—024X021N; Inclusion 1—028B024N; Inclusion 2—025X014N; Inclusion 3—024X018N

3421—Belate-Softscramble-Torro association

Positions on landscape: Mountains

Composition

Major components:
Belate very gravelly loam, 15 to 30 percent slopes—50 percent
Softscramble gravelly loam, 15 to 30 percent slopes—20 percent
Torro gravelly loam, 30 to 50 percent slopes—15 percent
Contrasting inclusions:
Cleavage very cobbly loam, 4 to 15 percent slopes—6 percent
Welch loam, drained, 2 to 8 percent slopes—4 percent
Rock outcrop—3 percent
Welch loam, 2 to 8 percent slopes—2 percent

Characteristics of the Belate Soil

Classification: Aridic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Convex side slopes of mountains
Parent material: Colluvium and residuum derived from tuff and andesite
Slope: 15 to 30 percent
Elevation: 7,000 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

Typical Profile

Rock fragments on surface: 15 percent cobbles and stones, 65 percent pebbles
Depth: 0 to 14 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Neutral
Depth: 14 to 60 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Mildly alkaline

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 6.7 to 7.8 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Softscramble Soil

Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave side slopes of mountains in areas where snow accumulates, incipient drainageways
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 7,000 to 8,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

Typical Profile

Rock fragments on surface: 5 percent cobbles, 25 percent pebbles
Depth: 0 to 16 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 16 to 30 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral
Depth: 30 to 60 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 7.8 to 9.2 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Torro Soil

Classification: Aridic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: South- and west-facing side slopes of mountains
Parent material: Colluvium and residuum derived from chert and shale
Slope: 30 to 50 percent
Elevation: 7,000 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

Typical Profile

Rock fragments on surface: 5 percent cobbles, 20 percent pebbles
Depth: 0 to 10 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 10 to 34 inches
Texture: Extremely gravelly loam, extremely gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral
Depth: 34 to 60 inches
Texture: Very gravelly sandy loam, very gravelly loamy coarse sand
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Neutral
Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.0 to 6.5 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.15; T value—5; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Crests of mountains
Distinctive present vegetation: Low sagebrush, black sagebrush, bluegrass

Inclusion 2
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Entrenched parts of intermountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 3
Positions on landscape: Scattered peaks and eroded side slopes
Distinctive present vegetation: None

Inclusion 4
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Smooth intermountain drainageways
Distinctive present vegetation: Sedge, rush, bluegrass, iris, rose

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Belate Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Softscrabble Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Torro Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Belate Soil
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Softscrabble Soil
Range seeding: Fair—small stones
Roadfill: Fair—large stones, slope, shrink-swell
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Torro Soil
Range seeding: Poor—erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Belate soil—VIIa, nonirrigated; Softscrabble soil—VIIa, nonirrigated; Torro soil—VIIa, nonirrigated

Range site: Belate soil—024X027N; Softscrabble soil—024X021N; Torro soil—024X029N; Inclusion 1—024X016N; Inclusion 2—028B024N; Inclusion 3—none; Inclusion 4—025X005N

3422—Belate-Robson-Torro association

Positions on landscape: Mountains
Composition

Major components:
Belate gravelly loam, 15 to 30 percent slopes—45 percent
Robson gravelly loam, 15 to 30 percent slopes—25 percent
Torro gravelly loam, 15 to 30 percent slopes—15 percent
Contrasting inclusions:
Softscrabble cobbly loam, 15 to 30 percent slopes—9 percent
Rock outcrop—3 percent
Welch loam, drained, 2 to 8 percent slopes—2 percent
Welch loam, 2 to 8 percent slopes—1 percent

Characteristics of the Belate Soil

Classification: Aridic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: North-facing side slopes of mountains
Parent material: Colluvium and residuum derived from tuff and andesite
Slope: 15 to 30 percent
Elevation: 7,000 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

Typical Profile

Depth: 0 to 12 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Neutral
Depth: 12 to 60 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Mildly alkaline

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 7.2 to 8.4 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erosion group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Robson Soil

Classification: Lithic Xerolic Hapludands, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex, south-facing crests, shoulder slopes, and side slopes of mountains
Parent material: Residuum derived from siliceous tuff, rhyolite, and andesite
Slope: 15 to 30 percent
Elevation: 7,000 to 8,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Low sagebrush, Sandberg bluegrass

Typical Profile

Rock fragments on surface: 5 percent cobbles, 20 percent pebbles
Depth: 0 to 2 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 2 to 15 inches
Texture: Very cobbly clay, extremely cobbly clay
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 15 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 0.6 to 1.2 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1; wind erosion group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Torro Soil

Classification: Aridic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: South-facing side slopes of mountains
Parent material: Colluvium and residuum derived from chert and shale
Slope: 15 to 30 percent
Elevation: 7,000 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

Typical Profile
Rock fragments on surface: 10 percent cobbles, 20 percent pebbles
Depth: 0 to 10 inches
Texture: Gravely loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 10 to 38 inches
Texture: Extremely gravely loam, extremely gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral
Depth: 38 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy coarse sand
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Neutral

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 4.8 to 6.0 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid

Positions on landscape: Sheltered, lower side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue

Inclusion 2
Positions on landscape: Scattered peaks and eroded side slopes
Distinctive present vegetation: None

Inclusion 3
Classification: Cumulic Hapludolls, fine-loamy, mixed, frigid
Positions on landscape: Entrenched parts of intermountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 4
Classification: Cumulic Hapludolls, fine-loamy, mixed, frigid
Positions on landscape: Smooth intermountain drainageways
Distinctive present vegetation: Sedge, bluegrass, rose, hairgrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Belate Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Robson Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Torro Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Belate Soil
Range seeding: Fair—erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Robson Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones, thin layer
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Torro Soil
Range seeding: Fair—erodes easily
Roadfill: Fair—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Belate soil—Vle, nonirrigated; Robson and Torro soils—Vle, nonirrigated
Range site: Belate soil—024X027N; Robson soil—024X018N; Torro soil—024X029N; Inclusion 1—024X021N; Inclusion 2—none; Inclusion 3—028B024N; Inclusion 4—025X005N

3423—Belate-Cleavage-Softscrabble association

Positions on landscape: Mountains

Composition

Major components:
Belate very gravelly loam, 30 to 50 percent slopes—35 percent
Cleavage extremely gravelly loam, 15 to 30 percent slopes—30 percent
Softscrabble gravelly loam, 15 to 30 percent slopes—20 percent
Contrasting inclusions:
Torro very gravelly loam, 30 to 50 percent slopes—9 percent
Rock outcrop—3 percent
Welch loam, drained, 2 to 8 percent slopes—2 percent
Welch loam, 2 to 8 percent slopes—1 percent

Characteristics of the Belate Soil
Classification: Aridic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Convex, lower side slopes of mountains
Parent material: Colluvium and residuum derived from tuff and andesite
Slope: 30 to 50 percent
Elevation: 6,500 to 7,800 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

Typical Profile
Rock fragments on surface: 5 percent cobbles, 40 percent pebbles
Depth: 0 to 14 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Neutral

Depth: 14 to 60 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Mildly alkaline

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 6.7 to 7.8 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Cleavage Soil
Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Convex, windswept crests, shoulder slopes, and upper side slopes of mountains
Parent material: Residuum derived from rhyolite and other igneous rock
Slope: 15 to 30 percent
Landers County, Nevada, South Part

Elevation: 6,500 to 7,800 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Low sagebrush, black sagebrush, Idaho fescue, bluegrass

Typical Profile

Rock fragments on surface: 10 percent cobbles, 60 percent pebbles
Depth: 0 to 4 inches
Texture: Extremely gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 4 to 15 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Neutral
Depth: 15 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 2.5 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Softscabble Soil

Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave side slopes of mountains
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 6,500 to 7,800 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

Typical Profile

Rock fragments on surface: 30 percent pebbles
Depth: 0 to 16 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 16 to 30 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral
Depth: 30 to 60 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 7.8 to 9.2 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Aridic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: South-facing side slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, mountain big sagebrush

Inclusion 2
Positions on landscape: Rims, severely eroded side slopes
Distinctive present vegetation: None

Inclusion 3
Classification: Cumalic Haplauquolls, fine-loamy, mixed, frigid
Positions on landscape: Mountain drainageways
Distinctive present vegetation: Basin big sagebrush, sedge, iris, basin wildrye
Inclusion 4
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Near seeps and springs
Distinctive present vegetation: Sedge, iris, bluegrass, hairgrass

### Major Current Uses
Livestock grazing, wildlife habitat

### Suitability for Wildlife Habitat Elements

#### Belate Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

#### Cleavage Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

#### Softscrable Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

### Suitability and Limitations for Selected Uses

#### Belate Soil
- Range seeding: Poor—small stones, erodes easily
- Roadfill: Poor—slope
- Topsoil: Poor—small stones, area reclaim, slope
- Daily cover for landfill: Poor—small stones, slope
- Shallow excavations: Severe—slope
- Local roads and streets: Severe—slope
- Embankments, dikes, and levees: Slight
- Sand: Improbable source—excess fines
- Gravel: Improbable source—excess fines

#### Cleavage Soil
- Range seeding: Poor—droughty, small stones
- Roadfill: Poor—depth to rock
- Topsoil: Poor—depth to rock, small stones, slope
- Daily cover for landfill: Poor—depth to rock, small stones, slope
- Shallow excavations: Severe—depth to rock, slope
- Local roads and streets: Severe—depth to rock, slope
- Pond reservoir areas: Severe—depth to rock, slope
- Embankments, dikes, and levees: Severe—large stones
- Sand: Improbable source—excess fines
- Gravel: Improbable source—excess fines

#### Softscrable Soil
- Range seeding: Fair—erodes easily
- Roadfill: Fair—large stones, slope, shrink-swell
- Topsoil: Poor—small stones, area reclaim, slope
- Daily cover for landfill: Poor—small stones, slope
- Shallow excavations: Severe—slope
- Local roads and streets: Severe—slope
- Pond reservoir areas: Severe—slope

### Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

### Interpretive Groups
Land capability classification: Belate and Cleavage soils—VII, nonirrigated; Softscrable soil—VII, nonirrigated
Range site: Belate soil—024X027N; Cleavage soil—024X016N; Softscrable soil—024X021N; Inclusion 1—024X029N; Inclusion 2—none; Inclusion 3—028B024N; Inclusion 4—025X005N

### 3450—Reluctan-Robson-Cleavage association

#### Positions on landscape: Mountains

### Composition

**Major components:**
- Reluctan very cobbly loam, 30 to 50 percent slopes—45 percent
- Robson very gravelly loam, 15 to 30 percent slopes—20 percent
- Cleavage extremely gravelly loam, 4 to 15 percent slopes—20 percent

**Contrasting inclusions:**
- Rock outcrop—4 percent
- Rubble land—4 percent
- Cumulic Haploxerolls, fine-loamy, mixed, frigid, 0 to 4 percent slopes—4 percent
- Lithic Xerollic Haplorgids, loamy-skeletal, mixed, frigid, 8 to 30 percent slopes—3 percent

### Characteristics of the Reluctan Soil
Classification: Aridic Argixerolls, fine-loamy, mixed, frigid
Positions on landscape: Concave side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic rock
Slope: 30 to 50 percent
Elevation: 6,800 to 7,800 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

### Typical Profile
- Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
- Depth: 0 to 9 inches
- Texture: Very cobbly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Neutral
Depth: 9 to 27 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 27 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.5 to 5.5 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—2;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Robson Soil
Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex side slopes and shoulder slopes of mountains
Parent material: Residuum derived from siliceous tuff, rhyolite, and andesite
Slope: 15 to 30 percent
Elevation: 6,800 to 7,800 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Low sagebrush, Sandberg bluegrass
Typical Profile
Rock fragments on surface: 5 percent cobbles, 40 percent pebbles
Depth: 0 to 2 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 2 to 15 inches
Texture: Very cobbly clay, extremely cobbly clay
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 15 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 0.6 to 1.2 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1;
wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Cleavage Soil
Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Crests of mountains
Parent material: Residuum derived from rhyolite and other igneous rock
Slope: 4 to 15 percent
Elevation: 6,800 to 7,800 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Low sagebrush, black sagebrush, Idaho fescue, bluegrass
Typical Profile
Rock fragments on surface: 10 percent cobbles, 60 percent pebbles
Depth: 0 to 4 inches
Texture: Extremely gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 4 to 18 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Neutral
Depth: 18 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.4 to 2.0 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 2
Positions on landscape: Rock stripes below areas of Rock outcrop
Distinctive present vegetation: None

Inclusion 3
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Basin big sagebrush, bluegrass

Inclusion 4
Classification: Lithic Xerollic Hapludands, loamy-skeletal, mixed, frigid
Positions on landscape: The lower, north-facing side slopes of mountains
Distinctive present vegetation: Black sagebrush, pine bluegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Reluctan Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Robson Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Cleavage Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Reluctan Soil
Range seeding: Poor—large stones

Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Robson Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones, thin layer
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Cleavage Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Reluctan, Robson, and Cleavage soils—VIIa, nonirrigated
Range site: Reluctan soil—024X021N; Robson soil—024X018N; Cleavage soil—024X016N; Inclusions 1 and 2—none; Inclusion 3—028B024N; Inclusion 4—024X031N

3453—Reluctan-Locane-Iltca association

Positions on landscape: Mountains

Composition
Major components:
Reluctan very gravelly loam, 30 to 50 percent slopes—35 percent
Land County, Nevada, South Part

Locane extremely gravelly sandy loam, 30 to 50 percent slopes—25 percent
Itca very cobble loam, 15 to 30 percent slopes—25 percent
Contrasting inclusions:
Softscrabble gravelly loam, 15 to 30 percent slopes—7 percent
Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid, 15 to 30 percent slopes—5 percent
Welch loam, drained, 2 to 8 percent slopes—2 percent
Rock outcrop—1 percent

Characteristics of the Reluctan Soil
Classification: Aridic Argixerolls, fine-loamy, mixed, frigid
Positions on landscape: North-, east-, and west-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic rock
Slope: 30 to 50 percent
Elevation: 6,500 to 7,600 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

Typical Profile
Rock fragments on surface: 10 percent cobbles, 55 percent pebbles
Depth: 0 to 6 inches
Texture: Extremely gravelly sandy loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Neutral

Depth: 9 to 27 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistency: Hard, firm
Reaction: Mildly alkaline

Depth: 27 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—2
wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Locane Soil
Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: South-facing side slopes of mountains
Parent material: Residuum derived from shale and conglomerate
Slope: 30 to 50 percent
Elevation: 6,500 to 7,600 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 10 percent cobbles, 55 percent pebbles
Depth: 0 to 6 inches
Texture: Extremely gravelly sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 6 to 14 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Depth: 14 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1
wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low
Characteristics of the Itca Soil

Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Crests, shoulder slopes, and convex side slopes of mountains
Parent material: Residuum derived from extrusive volcanic and pyroclastic rock
Slope: 15 to 30 percent
Elevation: 6,500 to 7,600 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush
Site index for singleleaf pinyon: 70

Typical Profile
Rock fragments on surface: 25 percent cobbles, 20 percent pebbles
Depth: 0 to 9 inches
Texture: Very cobbly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 9 to 17 inches
Texture: Very cobbly clay, very gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline

Depth: 17 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.5 to 2.5 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid

Positions on landscape: Concave, north-facing side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue, snowberry

Inclusion 2
Classification: Xerollic Haplorgids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Stable, convex side slopes of mountains
Distinctive present vegetation: Low sagebrush, bluegrass

Inclusion 3
Classification: Cumulic Haplaurolls, fine-loamy, mixed, frigid
Positions on landscape: Inset fans at the base of mountains and along canyon bottoms
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 4
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Reluctan Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Locane Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Itca Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Reluctan Soil
Range seeding: Poor—small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Locane Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
**Daily cover for landfill:** Poor—depth to rock, small stones, slope

**Shallow excavations:** Severe—depth to rock, slope

**Local roads and streets:** Severe—depth to rock, slope

**Pond reservoir areas:** Severe—depth to rock, slope

**Embankments, dikes, and levees:** Severe—thin layer

**Sand:** Improbable source—excess fines

**Gravel:** Improbable source—excess fines

**Itca Soil**

**Range seeding:** Poor—droughty, large stones

**Roadfill:** Poor—depth to rock, large stones

**Topsoil:** Poor—depth to rock, small stones, too clayey

**Daily cover for landfill:** Poor—depth to rock, too clayey, small stones

**Shallow excavations:** Severe—depth to rock, large stones, slope

**Local roads and streets:** Severe—depth to rock, large stones, slope

**Pond reservoir areas:** Severe—depth to rock, slope

**Embankments, dikes, and levees:** Severe—large stones

**Sand:** Improbable source—excess fines, large stones

**Gravel:** Improbable source—excess fines, large stones

**Interpretive Groups**

**Land capability classification:** Reluctan, Locane, and Itca soils—VII, nonirrigated

**Range site:** Reluctan soil—024X021N; Locane soil—024X035N; Itca soil—025X061N; Inclusion 1—024X021N; Inclusion 2—024X018N; Inclusion 3—028B024N; Inclusion 4—none

**3455—Reluctan-Roca-Colbar association**

**Positions on landscape:** Mountains

**Composition**

**Major components:**
- Reluctan very cobbly loam, 30 to 50 percent slopes—40 percent
- Roca very cobbly loam, 30 to 50 percent slopes—30 percent
- Colbar cobbly loam, 15 to 30 percent slopes—15 percent

**Contrasting inclusions:**
- Rock outcrop—7 percent
- Pachic Haploxerolls, loamy-skeletal, mixed, frigid, 30 to 50 percent slopes—4 percent
- Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 8 to 30 percent slopes—4 percent

**Characteristics of the Reluctan Soil**

**Classification:** Aridic Argixerolls, fine-loamy, mixed, frigid

**Positions on landscape:** North- and east-facing side slopes of mountains

**Parent material:** Colluvium and residuum derived from rhyolitic rock

**Slope:** 30 to 50 percent

**Elevation:** 5,400 to 6,400 feet

**Average annual precipitation:** About 12 inches

**Average annual air temperature:** About 43 degrees F

**Frost-free season:** About 80 days

**Dominant present vegetation:** Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

**Typical Profile**

**Rock fragments on surface:** 30 percent cobbles, 20 percent pebbles

**Depth:** 0 to 9 inches

**Texture:** Very cobbly loam

**Structure:** Platy

**Consistency:** Slightly hard, friable

**Reaction:** Neutral

**Depth:** 9 to 27 inches

**Texture:** Gravelly clay loam, gravelly loam

**Structure:** Subangular blocky

**Consistency:** Hard, firm

**Reaction:** Mildly alkaline

**Depth:** 27 inches

**Kind of material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 20 to 40 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None

**Permeability:** Moderately slow

**Available water capacity:** 3.5 to 5.5 inches

**Water-supplying capacity:** 12 inches

**Runoff:** Medium

**Hydrologic group:** C

**Erosion factors (upper layer):** K value—0.10; T value—2; wind erodibility group—8

**Hazard of erosion:** By water—moderate; by wind—slight

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—moderate; to concrete—low

**Potential for frost action:** Moderate

**Characteristics of the Roca Soil**

**Classification:** Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid

**Positions on landscape:** South- and west-facing side slopes of mountains

**Parent material:** Residuum derived from shale and chert

**Slope:** 30 to 50 percent

**Elevation:** 5,400 to 6,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Bluegrass, bluebunch wheatgrass, big sagebrush

**Typical Profile**

**Rock fragments on surface:** 30 percent cobbles, 20 percent pebbles

**Depth:** 0 to 5 inches
**Texture:** Very cobbly loam
**Structure:** Subangular blocky
**Consistency:** Slightly hard, very friable
**Reaction:** Neutral
**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 5 to 27 inches
**Texture:** Very gravelly clay loam, very gravelly clay
**Structure:** Angular blocky
**Consistency:** Hard, firm
**Reaction:** Mildly alkaline
**Salinity:** 0 to 2 millimhos per centimeter

**Depth:** 27 inches
**Kind of material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 20 to 40 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None
**Permeability:** Very slow
**Available water capacity:** 2.6 to 4.5 inches
**Water-supplying capacity:** 11 inches

**Runoff:** Rapid

**Hydrologic group:** D

**Erosion factors (upper layer):** K value—0.10; T value—2; wind erodibility group—8

**Hazard of erosion:** By water—slight; by wind—slight

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Low

**Characteristics of the Colbar Soil**

**Classification:** Xerolic Haplargids, fine-loamy, mixed, mesic

**Positions on landscape:** The lower side slopes of mountains

**Parent material:** Colluvium and residuum derived from rhyolite and andesite

**Slope:** 15 to 30 percent

**Elevation:** 5,400 to 6,000 feet

**Average annual precipitation:** About 9 inches

**Average annual air temperature:** About 48 degrees F

**Frost-free season:** About 110 days

**Dominant present vegetation:** Needlegrass, bluegrass, Wyoming big sagebrush

**Typical Profile**

**Rock fragments on surface:** 15 percent cobbles, 10 percent pebbles

**Depth:** 0 to 3 inches
**Texture:** Cobble loam
**Structure:** Platy
**Consistency:** Soft, very friable
**Reaction:** Moderately alkaline

**Depth:** 3 to 22 inches
**Texture:** Cobble loam, gravelly clay loam
**Structure:** Subangular blocky
**Consistency:** Slightly hard, friable
**Reaction:** Moderately alkaline

**Depth:** 22 to 26 inches
**Texture:** Gravelly loam, cobble loam
**Structure:** Subangular blocky
**Consistency:** Slightly hard, friable
**Reaction:** Moderately alkaline

**Depth:** 26 inches
**Kind of material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 20 to 40 inches

**Depth to a seasonal high water table:** More than 60 inches

**Frequency of flooding:** None
**Permeability:** Moderately slow
**Available water capacity:** 2.8 to 4.0 inches
**Water-supplying capacity:** 9 inches

**Runoff:** Rapid

**Hydrologic group:** C

**Erosion factors (upper layer):** K value—0.17; T value—2; wind erodibility group—6

**Hazard of erosion:** By water—moderate; by wind—slight

**Shrink-swell potential:** Moderate

**Corrosivity:** To steel—high; to concrete—low

**Potential for frost action:** Moderate

**Contrasting Inclusions**

**Inclusion 1**

**Positions on landscape:** Rimrock on shoulder slopes and scattered peaks of mountains

**Distinctive present vegetation:** None

**Inclusion 2**

**Classification:** Pachic Haploxerolls, loamy-skeletal, mixed, frigid

**Positions on landscape:** North-facing snow pockets

**Distinctive present vegetation:** Idaho fescue, bluebunch wheatgrass, mountain big sagebrush
Inclusion 3
Classification: Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Eroded, lower shoulder slopes and nose slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, ephedra

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Reluctan Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Roca Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Colbar Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Reluctan Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Roca Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Colbar Soil
Range seeding: Fair—too arid, large stones, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—large stones, slope
Daily cover for landfill: Poor—depth to rock, large stones, slope

Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Reluctan and Roca soils—
Vlls, nonirrigated; Colbar soil—Vle, nonirrigated
Range site: Reluctan soil—024X021N; Roca soil—024X028N; Colbar soil—024X005N; Inclusion 1—none; Inclusion 2—024X021N; Inclusion 3—024X047N

3457—Reluctan-Clanapline-Roca association
Positions on landscape: Mountains

Composition
Major components:
Reluctan very cobbly loam, 15 to 30 percent slopes—35 percent
Clanapline very gravelly loam, 15 to 30 percent slopes—30 percent
Roca very cobbly loam, 15 to 50 percent slopes—20 percent
Contrasting inclusions:
Lithic Xerolol Holaplargids, clayey-skeletal, mixed, mesic, 15 to 50 percent slopes—8 percent
Rock outcrop—4 percent
Xeric Holaplargids, fine-loamy, mixed, frigid, 8 to 15 percent slopes—3 percent

Characteristics of the Reluctan Soil
Classification: Ardic Argixerolls, fine-loamy, mixed, frigid
Positions on landscape: East- and west-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic rock
Slope: 15 to 30 percent
Elevation: 6,000 to 7,100 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

Typical Profile
Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 9 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Neutral
Depth: 9 to 27 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 27 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3 to 5 inches
Water-supplying capacity: 14 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Clanalpine Soil
Classification: Typic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: North-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic and andesitic tuff
Slope: 15 to 30 percent
Elevation: 6,000 to 7,100 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper
Site index for singleleaf pinyon: 75

Typical Profile
Rock fragments on surface: 5 percent stones and boulders, 40 percent cobbles, 20 percent pebbles
Depth: 0 to 10 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 10 to 39 inches
Texture: Very gravelly clay loam, very cobbly loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Mildly alkaline
Depth: 39 inches
Kind of material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5 to 7 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Classification: Xerolic Hapludands, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: South-facing side slopes of mountains
Parent material: Residuum derived from shale and chert
Slope: 15 to 50 percent
Elevation: 6,000 to 7,100 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Bluegrass, bluebunch wheatgrass, big sagebrush

Typical Profile
Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 4 inches
Texture: Very cobbly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Depth: 4 to 24 inches
Texture: Very gravelly clay loam, very gravelly clay
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 24 inches
Kind of material: Unweathered bedrock
Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.6 to 4.5 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Lithic Xerollic Haplargids, clayey-skeletal, mixed, mesic
Positions on landscape: The lower side slopes of mountains
Distinctive present vegetation: Black sagebrush, Thurber needlegrass, bluegrass

Inclusion 2
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 3
Classification: Xerollic Haplargids, fine-loamy, mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Reluctan Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Clanapline Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Roca Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Reluctan Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Clanapline Soil
Range seeding: Poor—small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Roca Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embarkments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Reluctan, Clanapline, and Roca soils—VIIa, nonirrigated
Range site: Reluctan soil—024X021N; Clanapline soil—025X061N; Roca soil—024X028N; Inclusion 1—024X031N; Inclusion 2—none; Inclusion 3—025X014N

3461—Torro-Rubble land-Cleavage association

Positions on landscape: Mountains

Composition

Major components:
Torro very gravelly loam, 50 to 75 percent slopes—40 percent
Rubble land—30 percent
Cleavage extremely gravelly loam, 15 to 30 percent
slopes—15 percent
Contrasting inclusions:
Reluctant very gravelly loam, 30 to 50 percent slopes—8
percent
Rock outcrop—5 percent
Arctic Haploxerolls, loamy-skeletal, mixed, frigid, 50 to
75 percent slopes—2 percent

**Characteristics of the Torro Soil**

*Classification:* Aridic Argixerolls, loamy-skeletal, mixed, frigid

*Positions on landscape:* South- and west-facing side
slopes of mountains

*Parent material:* Colluvium and residuum derived from
chert and shale

*Slope:* 50 to 75 percent

*Elevation:* 6,400 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 42 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Bluebunch wheatgrass,
needlegrass, bluegrass, mountain big sagebrush

**Typical Profile**

*Rock fragments on surface:* 15 percent cobbles, 30
percent pebbles

*Depth:* 0 to 10 inches

*Texture:* Very gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 10 to 34 inches

*Texture:* Extremely gravelly loam, extremely gravelly
clay loam

*Structure:* Angular blocky

*Consistence:* Hard, friable

*Reaction:* Neutral

*Depth:* 34 to 60 inches

*Texture:* Extremely gravelly sandy loam, extremely
gravelly loamy coarse sand

*Structure:* Massive

*Consistence:* Slightly hard, very friable

*Reaction:* Neutral

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60
inches

*Frequency of flooding:* None

*Permeability:* Moderate

*Available water capacity:* 4 to 6 inches

*Water-supplying capacity:* 11 inches

*Runoff:* Rapid

**Hydrologic group:** B

*Erosion factors (upper layer):* K value—0.15; T value—5;
wind erodibility group—7

*Hazard of erosion:* By water—severe; by wind—slight

*Shrink-swell potential:* Low

*Corrosivity:* To steel—moderate; to concrete—low

*Potential for frost action:* Moderate

**Characteristics of the Rubble Land**

*Positions on landscape:* Side slopes of mountains

*Kind of material:* Rock stripes and talus deposits that
are 95 percent stones and boulders

*Distinctive present vegetation:* None

**Characteristics of the Cleavage Soil**

*Classification:* Lithic Argixerolls, loamy-skeletal, mixed,
frigid

*Positions on landscape:* Convex, windswept crests and
shoulder slopes of mountains

*Parent material:* Residuum derived from rhyolite and
other igneous rock

*Slope:* 15 to 30 percent

*Elevation:* 7,000 to 8,200 feet

*Average annual precipitation:* About 14 inches

*Average annual air temperature:* About 44 degrees F

*Frost-free season:* About 80 days

*Dominant present vegetation:* Low sagebrush, black
sagebrush, Idaho fescue, bluegrass

**Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 60
percent pebbles

*Depth:* 0 to 4 inches

*Texture:* Extremely gravelly loam

*Structure:* Platy

*Consistence:* Soft, very friable

*Reaction:* Neutral

*Depth:* 4 to 15 inches

*Texture:* Very gravelly clay loam

*Structure:* Angular blocky

*Consistence:* Slightly hard, friable

*Reaction:* Neutral

*Depth:* 15 inches

*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches

*Depth to a seasonal high water table:* More than 60
inches

*Frequency of flooding:* None

*Permeability:* Moderately slow

*Available water capacity:* 1.5 to 2.5 inches

*Water-supplying capacity:* 9 inches

*Runoff:* Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.05; T value—1;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

**Contrasting Inclusions**

**Inclusion 1**
*Classification:* Aridic Argixerolls, fine-loamy, mixed, frigid
*Positions on landscape:* Concave, north-facing side slopes of mountains
*Distinctive present vegetation:* Mountain big sagebrush, bluebunch wheatgrass, Idaho fescue

**Inclusion 2**
*Positions on landscape:* Rims of mountains
*Distinctive present vegetation:* None

**Inclusion 3**
*Classification:* Aridic Haploxerolls, loamy-skeletal, mixed, frigid
*Positions on landscape:* Immediately below areas of Rock outcrop and Rubble land on side slopes of mountains
*Distinctive present vegetation:* Chokecherry, oceanspray, currant

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Torro Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Cleavage Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses**

**Torro Soil**
*Range seeding:* Poor—small stones, erodes easily
*Roadfill:* Poor—slope
*Topsoil:* Poor—small stones, area reclaim, slope
*Daily cover for landfill:* Poor—seepage, small stones, slope
*Shallow excavations:* Severe—cutbanks cave, slope
*Local roads and streets:* Severe—slope
*Pond reservoir areas:* Severe—seepage, slope
*Embankments, dikes, and levees:* Severe—seepage
*Sand:* Probable source
*Gravel:* Probable source

**Cleavage Soil**
*Range seeding:* Poor—droughty, small stones
*Roadfill:* Poor—depth to rock

**Topsoil:** Poor—depth to rock, small stones, slope
**Daily cover for landfill:** Poor—depth to rock, small stones, slope
**Shallow excavations:** Severe—depth to rock, slope
**Local roads and streets:** Severe—depth to rock, slope
**Pond reservoir areas:** Severe—depth to rock, slope
**Embankments, dikes, and levees:** Severe—large stones, thin layer
**Sand:** Improbable source—excess fines
**Gravel:** Improbable source—excess fines

**Interpretive Groups**

**Land capability classification:** Torro and Cleavage soils—VII, nonirrigated; Rubble land—VIII, nonirrigated
**Range site:** Torro soil—024X029N; Rubble land—none; Cleavage soil—024X016N; Inclusion 1—024X021N; Inclusion 2—none; Inclusion 3—024X034N

**3462—Torro-Reluctan-Cleavage association**

**Positions on landscape:** Mountains

**Composition**

**Major components:**
Torro extremely gravelly loam, 30 to 50 percent slopes—40 percent
Reluctan very cobbly loam, 30 to 50 percent slopes—30 percent
Cleavage extremely gravelly loam, 8 to 30 percent slopes—15 percent

**Contrasting inclusions:**
Rock outcrop—4 percent
Softscrabble gravelly loam, 15 to 30 percent slopes—4 percent
Lithic Xerollcotic Haplargids, loamy-skeletal, mixed, frigid, 15 to 50 percent slopes—4 percent
Fluventic Haploxerolls, loamy-skeletal, mixed, frigid, 4 to 15 percent slopes—3 percent

**Characteristics of the Torro Soil**

**Classification:** Aridic Argixerolls, loamy-skeletal, mixed, frigid
**Positions on landscape:** South-facing side slopes of mountains
**Parent material:** Colluvium and residuum derived from chert and shale
**Slope:** 30 to 50 percent
**Elevation:** 6,500 to 7,500 feet
**Average annual precipitation:** About 14 inches
**Average annual air temperature:** About 42 degrees F
**Frost-free season:** About 80 days
**Dominant present vegetation:** Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush
Typical Profile

Rock fragments on surface: 20 percent cobbles, 45 percent pebbles

Depth: 0 to 10 inches
Texture: Extremely gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral

Depth: 10 to 34 inches
Texture: Extremely gravelly loam, extremely gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral

Depth: 34 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy coarse sand
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 4 to 6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Reluctant Soil

Classification: Aridic Argixerolls, fine-loamy, mixed, frigid
Positions on landscape: North-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolite rock
Slope: 30 to 50 percent
Elevation: 6,500 to 7,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, Idaho fescue, mountain big sagebrush

Typical Profile

Rock fragments on surface: 30 percent cobbles, 20 percent pebbles

Depth: 0 to 9 inches
Texture: Very cobbly loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Neutral

Depth: 9 to 27 inches
Texture: Gravelly clay loam, gravelly loam
Structure: Subangular blocky
Consistency: Hard, firm
Reaction: Mildly alkaline
Depth: 27 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.5 to 6.0 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Cleavage Soil

Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Crests and ridges of mountains
Parent material: Residuum derived from rhyolite and other igneous rock
Slope: 8 to 30 percent
Elevation: 7,000 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Low sagebrush, black sagebrush, Idaho fescue, bluegrass

Typical Profile

Rock fragments on surface: 10 percent cobbles, 60 percent pebbles

Depth: 0 to 4 inches
Texture: Extremely gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral

Depth: 4 to 15 inches
Texture: Very gravelly clay loam
Lander County, Nevada, South Part

Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Neutral
Depth: 15 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 2.0 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.05; T value—1;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 2
Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave, north-facing snow pockets
Distinctive present vegetation: Mountain big sagebrush, bluebunch wheatgrass

Inclusion 3
Classification: Lithic Xerolic Haplargids, loamy-skeletal, mixed, frigid
Positions on landscape: Convex shoulder slopes and upper side slopes of mountains
Distinctive present vegetation: Utah juniper, singleleaf pinyon, big sagebrush

Inclusion 4
Classification: Fluventic Haploxerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Basin big sagebrush, bluegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Torro Soil
Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair
Reluctan Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Cleavage Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Torro Soil
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Reluctan Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Cleavage Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones, thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Torro, Reluctan, and Cleavage soils—Vlls, nonirrigated
Range site: Torro soil—024X029N; Reluctan soil—024X021N; Cleavage soil—024X016N; Inclusion
1—none; Inclusion 2—024X021N; Inclusion 3—024X029N; Inclusion 4—025X003N

3463—Torro-Cinalpine-ltca association

Positions on landscape: Mountains

Composition

Major components:
Torro extremely gravelly loam, 30 to 50 percent slopes—50 percent
Cinalpine very cobbly loam, 30 to 50 percent slopes—20 percent
ltca very cobbly loam, 15 to 30 percent slopes—15 percent
Contrasting inclusions:
Durixerollic Camborthids, loamy-skeletal, mixed, frigid, 8 to 15 percent slopes—5 percent
Roca very gravelly loam, 15 to 30 percent slopes—5 percent
Rock outcrop—3 percent
Rubble land—2 percent

Characteristics of the Torro Soil

Classification: Aridic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: South- and west-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic and andesitic tuff
Slope: 30 to 50 percent
Elevation: 6,500 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

Typical Profile

Depth: 0 to 10 inches
Texture: Extremely gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral

Depth: 10 to 34 inches
Texture: Extremely gravelly loam, extremely gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 34 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy coarse sand
Structure: Massive

Consistence: Slightly hard, very friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate over rapid
Available water capacity: 4.3 to 5.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5;
wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Cinalpine Soil

Classification: Typic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: North-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic and andesitic tuff
Slope: 30 to 50 percent
Elevation: 6,500 to 7,500 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper

Site index for singleleaf pinyon: 75

Typical Profile

Rock fragments on surface: 5 percent stones and boulders, 40 percent cobbles, 20 percent pebbles

Depth: 0 to 10 inches
Texture: Very cobbly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 10 to 39 inches
Texture: Very gravelly clay loam, very cobbly loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Mildly alkaline

Depth: 39 inches
Kind of material: Weathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Lander County, Nevada, South Part

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 6 inches
Water-supplying capacity: 13 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.17; T value—2; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Itca Soil
Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Crests and shoulder slopes of mountains
Parent material: Residuum derived from extrusive volcanic and pyroclastic rock
Slope: 15 to 30 percent
Elevation: 7,200 to 7,700 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush
Site index for singleleaf pinyon: 70

Typical Profile
Rock fragments on surface: 20 percent cobbles, 30 percent pebbles
Depth: 0 to 2 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 2 to 14 inches
Texture: Very cobbly clay, very gravelly clay loam
Structure: Prismatic
Consistence: Hard, firm
Reaction: Mildly alkaline
Depth: 14 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow

Available water capacity: 1.5 to 3.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Durixerollic Camborthids, loamy-skeletal, mixed, frigid
Positions on landscape: Narrow intermountain drainageways
Distinctive present vegetation: Wyoming big sagebrush, Indian ricegrass

Inclusion 2
Classification: Xerolic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: The lower, south-facing side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, bluebunch wheatgrass

Inclusion 3
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 4
Positions on landscape: Rock stripes below areas of Rock outcrop
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Torro Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Clanapline Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Itca Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Torro Soil
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Clanapline Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Itca Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Interpretive Groups
Land capability classification: Torro, Clanapline, and Itca soils—Vils, nonirrigated
Range site: Torro soil—024X029N; Clanapline and Itca soils—025X061N; Inclusion 1—028B010N; Inclusion 2—024X028N; Inclusions 3 and 4—none

3464—Torro-Itca-Softscrabble association
Positions on landscape: Mountains

Composition
Major components:
Torro extremely gravelly loam, 30 to 50 percent slopes—50 percent
Itca very cobbly loam, 30 to 50 percent slopes—20 percent
Softscrabble gravelly loam, 15 to 50 percent slopes—15 percent
Contrasting inclusions:
Rock outcrop—5 percent
Lithic Xerollic Hapludands, loamy-skeletal, mixed, frigid, 15 to 50 percent slopes—4 percent
Welch loam, drained, 2 to 8 percent slopes—3 percent
Rubble land—3 percent

Characteristics of the Torro Soil
Classification: Aridic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Convex, south- and west-facing side slopes of mountains
Parent material: Colluvium and residuum derived from chert and shale
Slope: 30 to 50 percent
Elevation: 6,800 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

Typical Profile
Rock fragments on surface: 15 percent cobbles, 65 percent pebbles
Depth: 0 to 10 inches
Texture: Extremely gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral

Depth: 10 to 34 inches
Texture: Extremely gravelly loam, extremely gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 34 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy coarse sand
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Neutral

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 4.3 to 5.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Itca Soil
Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex, north-facing side slopes of mountains
Parent material: Residuum derived from extrusive volcanic and pyroclastic rock
Slope: 30 to 50 percent
Elevation: 6,800 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush
Site index for singleleaf pinyon: 70

Typical Profile
Depth: 0 to 2 inches
Texture: Very cobbly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 2 to 14 inches
Texture: Very cobbly clay, very gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline
Depth: 14 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.8 to 2.3 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Positions on landscape: Scattered peaks
Distinctive present vegetation: None
Inclusion 2
Classification: Lithic Xerollic Haplorgids, loamy-skeletal, mixed, frigid
Positions on landscape: Convex, broad crests and shoulder slopes of mountains
Distinctive present vegetation: Low sagebrush

Inclusion 3
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Canyon bottoms, mountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 4
Positions on landscape: Side slopes of mountains
Distinctive present vegetation: None

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Torro Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Itca Soil**
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Softscrabbable Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Torro Soil**
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel:Probable source

**Itca Soil**
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones, slope
Topsoil: Poor—depth to rock, large stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, too clayey
Shallow excavations: Severe—depth to rock, large stones, slope

**Softscrabbable Soil**
Range seeding: Poor—erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Probable source
Gravel: Probable source

**Interpretive Groups**
Land capability classification: Torro and Itca soils—VIIs, nonirrigated; Softscrabbable soil—VIIe, nonirrigated
Range site: Torro soil—024X029N; Itca soil—024X061N; Softscrabbable soil—024X021N; Inclusion 1—none; Inclusion 2—024X018N; Inclusion 3—028B024N; Inclusion 4—none

**3465—Torro-Clanalpine-Softscrabbable association**
Positions on landscape: Mountains

**Composition**
Major components:
Torro extremely gravelly loam, 30 to 50 percent slopes—35 percent
Clanalpine extremely cobbly loam, 30 to 50 percent slopes—30 percent
Softscrabbable loam, 30 to 50 percent slopes—20 percent
Contrasting inclusions:
Rock outcrop—6 percent
Itca very cobbly loam, 30 to 50 percent slopes—6 percent
Lithic Argixerolls, loamy-skeletal, mixed, frigid, 15 to 50 percent slopes—3 percent

**Characteristics of the Torro Soil**
Classification: Aridic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave, south- and west-facing side slopes of mountains
Parent material: Colluvium and residuum derived from chert and shale
Slope: 30 to 50 percent
Elevation: 6,800 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, needlegrass, bluegrass, mountain big sagebrush

Typical Profile
Depth: 0 to 10 inches
Texture: Extremely gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral

Depth: 10 to 34 inches
Texture: Extremely gravelly loam, extremely gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 34 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy coarse sand
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Neutral

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 4.3 to 5.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Soil
Classification: Typic Argixerolls, loamy-skeletal, mixed
Positions on landscape: Concave, east-facing and upper, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic and andesitic tuff
Slope: 30 to 50 percent
Elevation: 6,800 to 8,000 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper
Site index for singleleaf pinyon: 75

Typical Profile
Rock fragments on surface: 5 percent stones and boulders, 40 percent cobbles, 20 percent pebbles
Depth: 0 to 10 inches
Texture: Extremely cobbly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 10 to 39 inches
Texture: Very gravelly clay loam, very cobbly loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Mildly alkaline
Depth: 39 inches
Kind of material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4 to 6 inches
Water-supplying capacity: 13 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Soft Scrabblle Soil
Classification: Pachic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave, lower, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from volcanic rock
Slope: 30 to 50 percent
Elevation: 6,800 to 8,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, snowberry

Typical Profile
Depth: 0 to 16 inches
Texture: Loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 16 to 30 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 30 to 60 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 7 to 9 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Positions on landscape: Scattered peaks and cliffs
Distinctive present vegetation: None

Inclusion 2
Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Near areas of Rock outcrop on crests of mountains
Distinctive present vegetation: Single leaf pinyon, mountain big sagebrush, bluegrass

Inclusion 3
Classification: Lithic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Crests of mountains
Distinctive present vegetation: Low sagebrush, black sagebrush, bluegrass

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Torro Soil
Wild herbaceous plants (nonirrigated): Fair

Clanalpine Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Softscrabble Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Torro Soil
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—seepage, small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Clanalpine Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Softscrabble Soil
Range seeding: Poor—erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Torro and Clanalpine soils—VIIa, nonirrigated; Softscrabble soil—VIIb, nonirrigated
Range site: Torro soil—024X029N; Clanalpine soil—025X061N; Softscrabble soil—028B049N; Inclusion
3562—Locane-Coztur-Punchbowl association

Positions on landscape: Mountains

Composition

Major components:
Locane gravelly loam, 8 to 15 percent slopes—35 percent
Coztur gravelly loam, 8 to 15 percent slopes—25 percent
Punchbowl gravelly loam, 15 to 30 percent slopes—25 percent

Contrasting inclusions:
Xerollic Haplargids, fine, montmorillonitic, frigid, 4 to 15 percent slopes—8 percent
Robson very cobbly loam, 15 to 30 percent slopes—5 percent
Rock outcrop—2 percent

Characteristics of the Locane Soil

Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Summits, crests, and concave side slopes of mountains
Parent material: Residuum derived from shale and conglomerate
Slope: 8 to 15 percent
Elevation: 6,400 to 7,300 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 10 percent cobbles, 40 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 6 to 14 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 14 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.5 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight, by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Coztur Soil

Classification: Lithic Xerollic Haplargids, loamy, mixed, frigid
Positions on landscape: Convex, north-facing side slopes of mountains
Parent material: Residuum derived from volcanic rock
Slope: 8 to 15 percent
Elevation: 6,400 to 7,300 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, needlegrass, bluegrass

Typical Profile

Rock fragments on surface: 10 percent cobbles, 40 percent pebbles
Depth: 0 to 11 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline

Depth: 11 to 17 inches
Texture: Loam, clay loam
Structure: Subangular blocky
Consistence: Hard, friable

Depth: 17 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.1 to 3.5 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Punchbowl Soil
Classification: Lithic Xerollic Haplargids, loamy, mixed, frigid
Positions on landscape: Convex, south- and west-facing side slopes of mountains
Parent material: Residuum derived from andesite, dacite, rhyolite, and tuff
Slope: 15 to 30 percent
Elevation: 6,400 to 7,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days
Dominant present vegetation: Black sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile
Depth: 0 to 3 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 3 to 7 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 7 to 11 inches
Texture: Gravelly clay loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 11 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 2.0 inches
Water-supplying capacity: 8 inches
Runoff: Rapid

Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Xerollic Haplargids, fine, montmorillonitic, frigid
Positions on landscape: Toe slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, Wyoming big sagebrush, needlegrass

Inclusion 2
Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex, lower, north-facing side slopes of mountains
Distinctive present vegetation: Low sagebrush, bluegrass

Inclusion 3
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Locane Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Coztur Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Punchbowl Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Locane Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Coztur Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Punchbowl Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Locane and Coztur soils—
VIIIs, nonirrigated; Punchbowl soil—VIIe, nonirrigated
Range site: Locane soil—024X005N; Coztur soil—
025X014N; Punchbowl soil—028B016N; Inclusion
1—025X014N; Inclusion 2—024X018N; Inclusion
3—none

3563—Locane-Muni association
Positions on landscape: Mountains, fan piedmonts

Composition

Major components:
Locane gravelly sandy loam, 2 to 8 percent slopes—35 percent
Muni gravelly sandy loam, 2 to 8 percent slopes—30 percent
Locane very gravelly loam, eroded, 4 to 15 percent slopes—20 percent
Contrasting inclusions:
Akerue cobbly loam, 2 to 8 percent slopes—8 percent
Durixerolic Camborthids, coarse-loamy, mixed, frigid, 2 to 8 percent slopes—4 percent
Rock outcrop—3 percent

Characteristics of the Locane Soil
Classification: Lithic Xerolic Hapludands, clayey-skeletal, montmorillonitic, frigid

Positions on landscape: Concave side slopes of mountains
Parent material: Residuum derived from shale and conglomerate
Slope: 2 to 8 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Depth: 0 to 6 inches
Texture: Gravelly sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 6 to 14 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral
Depth: 14 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.2 to 2.2 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1;
wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Muni Soil
Classification: Haploxerolic Durargids, loamy, mixed, mesic, shallow
Positions on landscape: Fan piedmont remnants
Parent material: Mixed alluvium that includes loess and
volcanic ash
Slope: 2 to 8 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Needlegrass, bluegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 3 inches
Texture: Gravelly sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral
Depth: 3 to 18 inches
Texture: Sandy clay loam, clay loam, loam
Structure: Prismatic
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 18 to 49 inches
Kind of material: Cemented hardpan
Depth: 49 to 60 inches
Texture: Very gravelly loamy sand
Structure: Single grain
Consistency: Loose
Reaction: Strongly alkaline

Soil and Water Features
Depth to the hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.0 to 2.8 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.28; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Locane Soil, Eroded
Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex, rilled side slopes of mountains
Parent material: Residuum derived from shale and conglomerate
Slope: 4 to 15 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush, singleleaf pinyon
Site index for common trees: Utah juniper—22; singleleaf pinyon—22

Typical Profile
Rock fragments on surface: 40 percent pebbles
Depth: 0 to 2 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral
Depth: 2 to 10 inches
Texture: Very gravelly clay loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Neutral
Depth: 10 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.0 to 2.8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Classification: Xerollic Durargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Summits of hills
Distinctive present vegetation: Black sagebrush

Inclusion 2
Classification: Durixerollic Camborthids, coarse-loamy, mixed, frigid
Positions on landscape: Inset fans
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Positions on landscape: Scattered peaks, severely eroded areas
Distinctive present vegetation: None
Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Locane Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Muni Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Locane Soil, Eroded
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Poor
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Locane Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Muni Soil
Range seeding: Poor—droughty
Roadfill: Poor—cemented pan
Topsoil: Poor—cemented pan, area reclaim
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—seepage
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Locane Soil, Eroded
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Locane soils—VIIa, nonirrigated; Muni soil—IVe, irrigated, and VIIa, nonirrigated
Range site: Locane soil—02X005N; Muni soil—02B010N; Locane soil, eroded—025X062N; Inclusion 1—028B016N; Inclusion 2—024X041N; Inclusion 3—none

3625—Minat-Coztur-Belate association
Positions on landscape: Mountains

Composition
Major components:
Minat very gravelly very fine sandy loam, 30 to 50 percent slopes—40 percent
Coztur extremely gravelly loam, 15 to 30 percent slopes—30 percent
Belate very cobally loam, 15 to 30 percent slopes—15 percent
Contrasting inclusions:
Xerollic Haplargids, loamy-skeletal, mixed, frigid, 30 to 50 percent slopes—8 percent
Rock outcrop—5 percent
Welch clay loam, drained, 2 to 8 percent slopes—2 percent

Characteristics of the Minat Soil
Classification: Xerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Concave, south-facing side slopes of mountains
Parent material: Mixed colluvium that includes some volcanic ash
Slope: 30 to 50 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, bluebunch wheatgrass

Typical Profile
Rock fragments on surface: 10 percent cobbles, 35 percent pebbles
Depth: 0 to 9 inches
Texture: Very gravelly fine sandy loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Mildly alkaline
Depth: 9 to 27 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 27 to 60 inches
Texture: Very gravelly loam, very gravelly fine sandy loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.4 to 2.5 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.05; T value—1;
wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Belate Soil
Classification: Aridic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Convex, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from tuff and andesite
Slope: 15 to 30 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

Typical Profile
Rock fragments on surface: 25 percent cobbles, 20 percent pebbles
Depth: 0 to 12 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Neutral

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.4 to 2.5 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.05; T value—1;
wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Coztr Soil
Classification: Lithic Xerolic Haplargids, loamy, mixed, frigid
Positions on landscape: Crests and shoulder slopes of mountains
Parent material: Residuum derived from volcanic rock
Slope: 15 to 30 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, needlegrass, bluegrass

Typical Profile
Rock fragments on surface: 5 percent cobbles, 60 percent pebbles
Depth: 0 to 11 inches
Texture: Extremely gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline

Depth: 11 to 17 inches
Texture: Loam, clay loam
Structure: Subangular blocky
Consistence: Hard, friable

Depth: 17 inches
Kind of material: Unweathered bedrock
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Xerolic Hapludolls, loamy-skeletal, mixed, frigid
Positions on landscape: The lower, north-facing side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, serviceberry

Inclusion 2
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 3
Classification: Cumulic Hapludolls, fine-loamy, mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Minat Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Coztur Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Belate Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Minat Soil
Range seeding: Poor—small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Coztur Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Belate Soil
Range seeding: Poor—large stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Minat, Coztur, and Belate soils—VIIs, nonirrigated
Range site: Minat soil—024X005N; Coztur soil—025X014N; Belate soil—024X027N; Inclusion 1—025X014N; Inclusion 2—none; Inclusion 3—028B024N

3690—Izod-Koynik-Rock outcrop association
Positions on landscape: Foothills

Composition
Major components:
Izod cobbly loam, 15 to 50 percent slopes—40 percent
Koynik extremely gravelly sandy loam, 15 to 30 percent slopes—30 percent
Rock outcrop—15 percent
Contrasting inclusions:
Xeric Torriorthents, loamy, mixed, nonacid, mesic, shallow, 4 to 15 percent slopes—8 percent
Lithic Xerolic Hapludolls, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—7 percent

Characteristics of the Izod Soil
Classification: Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic
Positions on landscape: Convex, east- and north-facing crests, shoulder slopes, and side slopes of foothills
Parent material: Residuum and colluvium derived from limestone
Slope: 15 to 50 percent
Elevation: 5,500 to 6,100 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, bottlebrush squirreltail, black sagebrush

**Typical Profile**

**Rock fragments on surface:** 20 percent cobbles, 10 percent pebbles
**Depth:** 0 to 4 inches
**Texture:** Cobbly loam
**Structure:** Platy
**Consistency:** Slightly hard, very friable
**Reaction:** Moderately alkaline
**Depth:** 4 to 10 inches
**Texture:** Very gravelly loam, extremely gravelly loam
**Structure:** Massive
**Consistency:** Slightly hard, very friable
**Reaction:** Moderately alkaline
**Depth:** 10 inches
**Kind of material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 7 to 14 inches
**Depth to a seasonal high water table:** More than 60 inches
**Frequency of flooding:** None
**Permeability:** Moderate
**Available water capacity:** 0.5 to 1.5 inches
**Water-supplying capacity:** 8 inches
**Runoff:** Rapid
**Hydrologic group:** D
**Erosion factors (upper layer):** K value—0.24; T value—1; wind erodibility group—6
**Hazard of erosion:** By water—severe; by wind—slight
**Shrink-swell potential:** Low
**Corrosivity:** To steel—high; to concrete—low
**Potential for frost action:** Moderate

**Characteristics of the Koynik Soil**

**Classification:** Lithic Torriorthents, loamy-skeletal, carbonatic, mesic
**Positions on landscape:** South-facing side slopes of foothills
**Parent material:** Residuum and colluvium derived from limestone
**Slope:** 15 to 30 percent
**Elevation:** 5,500 to 6,100 feet

**Average annual precipitation:** About 7 inches
**Average annual air temperature:** About 49 degrees F
**Frost-free season:** About 110 days
**Dominant present vegetation:** Bottlebrush squirreltail, needlegrass, bud sagebrush, shadscale, ephedra

**Typical Profile**

**Rock fragments on surface:** 15 percent cobbles, 50 percent pebbles
**Depth:** 0 to 6 inches
**Texture:** Extremely gravelly sandy loam
**Structure:** Platy
**Consistency:** Slightly hard, very friable
**Reaction:** Moderately alkaline
**Depth:** 6 to 8 inches
**Texture:** Very gravelly loam, very gravelly very fine sandy loam
**Structure:** Platy
**Consistency:** Slightly hard, very friable
**Reaction:** Strongly alkaline
**Depth:** 8 inches
**Kind of material:** Unweathered bedrock

**Soil and Water Features**

**Depth to bedrock:** 8 to 14 inches
**Depth to a seasonal high water table:** More than 60 inches
**Frequency of flooding:** None
**Permeability:** Moderate
**Available water capacity:** 0.5 to 1.3 inches
**Water-supplying capacity:** 6 inches
**Runoff:** Rapid
**Hydrologic group:** D
**Erosion factors (upper layer):** K value—0.10; T value—1; wind erodibility group—6
**Hazard of erosion:** By water—slight; by wind—slight
**Shrink-swell potential:** Low
**Corrosivity:** To steel—high; to concrete—low
**Potential for frost action:** Low

**Characteristics of the Rock Outcrop**

**Positions on landscape:** Ledges, broad bedding planes
**Dominant present vegetation:** None

**Contrasting Inclusions**

**Inclusion 1**

**Classification:** Xeric Torriorthents, loamy, mixed, nonacid, mesic, shallow
**Positions on landscape:** Concave inset fans and interhill channels
**Distinctive present vegetation:** Wyoming big sagebrush, spiny hopsage
Inclusion 2
Classification: Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Convex, higher crests of foothills
Distinctive present vegetation: Black sagebrush, Indian ricegrass, small rabbitbrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Izod Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Koynik Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Izod Soil
Range seeding: Poor—droughty, erodes easily, depth to rock
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Koynik Soil
Range seeding: Poor—too arid, droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Izod and Koynik soils—VIIIs, nonirrigated; Rock outcrop—VIIIs, nonirrigated
Range site: Izod soil—024X030N; Koynik soil—024X025N; Rock outcrop—none; Inclusion 1—024X005N; Inclusion 2—028B016N

3740—Kelk silt loam, saline
Positions on landscape: Inset fans

Composition
Major component:
Kelk silt loam, saline, 0 to 2 percent slopes—85 percent
Contrasting inclusions:
Kelk very fine sandy loam, occasionally flooded, 0 to 2 percent slopes—7 percent
Broyles very fine sandy loam, 0 to 4 percent slopes—5 percent
Durothid Torriorthents, coarse-silty, mixed, mesic, 0 to 4 percent slopes—3 percent

Characteristics of the Kelk Soil
Classification: Durixerolic Camborthids, fine-silty, mixed, mesic
Positions on landscape: Inset fan remnants
Parent material: Loess that includes volcanic ash, mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,100 to 5,400 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Basin big sagebrush, basin wildrye, black greasewood

Typical Profile
Depth: 0 to 3 inches
Texture: Silt loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 3 to 18 inches
Texture: Silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 4 to 16 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 18 to 42 inches
Texture: Silt loam
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 4 to 16 millimhos per centimeter
Sodicity (SAR): 13 to 25
Depth: 42 to 60 inches
Texture: Silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Strongly alkaline
Salinity: 4 to 16 millimhos per centimeter  
Sodicity (SAR): 25 to 46

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 9 to 11 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Slow  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.55; T value—5;  
  wind erodibility group—6  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Moderate

**Contrasting Inclusions**

**Inclusion 1**
*Classification:* Durixerollic Camborthids, fine-silty, mixed, mesic  
*Positions on landscape:* Inset fans  
*Distinctive present vegetation:* Basin big sagebrush, black greasewood, rubber rabbitbrush

**Inclusion 2**
*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic  
*Positions on landscape:* Fan skirts  
*Distinctive present vegetation:* Shadscale, bud sagebrush, bottlebrush squirltail

**Inclusion 3**
*Classification:* Durorthidic Torriorthenths, coarse-silty, mixed, mesic  
*Positions on landscape:* Adjacent to channels and drainageways  
*Distinctive present vegetation:* Big saltbush, black greasewood, basin wildrye

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

*Wild herbaceous plants (nonirrigated):* Very poor  
*Shrubs (nonirrigated):* Very poor

**Suitability and Limitations for Selected Uses**

*Range seeding:* Poor—excess salt  
*Roadfill:* Fair—low strength, shrink-swell  
*Topsoil:* Poor—thin layer  
*Daily cover for landfill:* Good  
*Shallow excavations:* Slight

**Local roads and streets:** Moderate—low strength, frost action, shrink-swell  
**Pond reservoir areas:** Slight  
**Embankments, dikes, and levees:** Severe—piping  
**Sand:** Improbable source—excess fines  
**Gravel:** Improbable source—excess fines

**Interpretive Groups**

*Land capability classification:* Kelk soil—IIls, irrigated; VIs, nonirrigated  
*Range site:* Kelk soil—024X022N; Inclusion 1—024X006N; Inclusion 2—024X002N; Inclusion 3—024X015N

**3741—Kelk-Settlemeeyer association**

*Positions on landscape:* Inset fans

**Composition**

*Major components:* Kelk very fine sandy loam, occasionally flooded, 0 to 2 percent slopes—55 percent  
*Settlemeeyer fine sandy loam, drained, 0 to 2 percent slopes—30 percent  
*Contrasting inclusions:* Xerolic Camborthids, fine-loamy, mixed, mesic, 0 to 4 percent slopes—10 percent  
*Duric Camborthids, fine-loamy, mixed, mesic, 0 to 4 percent slopes—3 percent  
*Aeric Fluvaquents, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—2 percent

**Characteristics of the Kelk Soil**

*Classification:* Durixerollic Camborthids, fine-silty, mixed, mesic  
*Positions on landscape:* The lower inset fan remnants  
*Parent material:* Loess that includes volcanic ash, mixed alluvium  
*Slope:* 0 to 2 percent  
*Elevation:* 5,200 to 6,000 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 48 degrees F  
*frost-free season:* About 110 days  
**Dominant present vegetation:** Basin big sagebrush, basin wildrye, rubber rabbitbrush, black greasewood

**Typical Profile**

*Depth:* 0 to 14 inches  
*Texture:* Very fine sandy loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5
Landers County, Nevada, South Part

Depth: 14 to 51 inches
Texture: Silt loam
Structure: Massive
Consistency: Hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 5 to 13

Depth: 51 to 60 inches
Texture: Silt loam
Structure: Massive
Consistency: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Occasional for brief to long periods in February through June
Permeability: Slow
Available water capacity: 10 to 12 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Settleymeyer Soil

Classification: Fluvaquent Haplaquolls, fine-loamy, mixed, mesic
Positions on landscape: Recently dissected upper inset fan remnants
Parent material: Mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,200 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Basin wildrye, basin big sagebrush

Typical Profile

Depth: 0 to 16 inches
Texture: Fine sandy loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Mildly alkaline
Depth: 16 to 36 inches
Texture: Silty clay loam, clay loam

Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Depth: 36 to 60 inches
Texture: Stratified very gravelly loamy sand to silty clay loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Mildly alkaline

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 6 to 8 inches
Water-supplying capacity: 10 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Xerolitic Camborthods, fine-loamy, mixed, mesic
Positions on landscape: The higher recent inset fans
Distinctive present vegetation: Big saltbrush, black greasewood

Inclusion 2
Classification: Duric Camborthods, fine-loamy, mixed, mesic
Positions on landscape: Smooth, lower recent inset fans
Distinctive present vegetation: Spiny hopsage, black greasewood, shadscale

Inclusion 3
Classification: Aeric Fluvaquents, loamy-skeletal, mixed, mesic
Positions on landscape: Irregularly shaped, broad areas adjacent to channels
Distinctive present vegetation: Saltcedar, willow, rose

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Kelk Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Settlemeyer Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Kelk Soil
Range seeding: Fair—too arid
Roadfill: Poor—low strength
Topsoil: Good
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—low strength, flooding
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Settlemeyer Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—too clayey, small stones, area reclaim
Daily cover for landfill: Fair—too clayey, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Kelk soil—llw, irrigated, and Vlw, nonirrigated; Settlemeyer soil—llc, irrigated, and Vlc, nonirrigated
Range site: Kelk soil—024X006N; Settlemeyer soil—028B003N; Inclusion 1—024X015N; Inclusion 2—024X003N; Inclusion 3—028B033N

3742—Kelk-Ocala association
Positions on landscape: Inset fans, alluvial flats

Composition

Major components:
Kelk very fine sandy loam, occasionally flooded, 0 to 4 percent slopes—55 percent
Ocala silt loam, occasionally flooded, 0 to 2 percent slopes—30 percent

Contrasting inclusions:
Batan silt loam, 0 to 2 percent slopes—5 percent
Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent
Aquic Torriorthents, fine-silty, mixed (calcareous), mesic, 0 to 2 percent slopes—5 percent

Characteristics of the Kelk Soil
Classification: Durixerollic Camborthids, fine-silty, mixed, mesic
Positions on landscape: Broad inset fans dissecting alluvial flats
Parent material: Loess that includes volcanic ash, mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,200 to 5,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Basin big sagebrush, basin wildrye, rubber rabbitbrush, black greasewood

Typical Profile
Depth: 0 to 14 inches
Texture: Very fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 14 to 51 inches
Texture: Silt loam
Structure: Massive
Consistence: Hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 5 to 13
Depth: 51 to 60 inches
Texture: Silt loam
Structure: Massive
Consistence: Slightly hard, very friable
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 5 to 13

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Occasional for brief to long periods in February through June
Permeability: Slow
Available water capacity: 10 to 12 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate
Characteristics of the Ocala Soil

Classification: Aeric Halaquepts, fine-silty, mixed (calcareous), mesic
Positions on landscape: Dissected alluvial flats
Parent material: Mixed silty alluvium that includes volcanic ash
Slope: 0 to 2 percent
Elevation: 5,200 to 5,400 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye, alkali sacaton

Typical Profile
Depth: 0 to 4 inches
Texture: Silt loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Very strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 30 to 46

Depth: 4 to 36 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistence: Hard, brittle
Reaction: Strongly alkaline
Salinity: 16 to 30 millimhos per centimeter
Sodicity (SAR): 20 to 35

Depth: 36 to 60 inches
Texture: Silt loam, silty clay loam
Structure: Massive
Consistence: Very hard, very firm
Reaction: Strongly alkaline
Salinity: 8 to 16 millimhos per centimeter
Sodicity (SAR): 20 to 35

Soil and Water Features
Depth to a seasonal high water table: 42 to 60 inches
Frequency of flooding: Occasional for brief to long periods in February through May
Permeability: Slow
Available water capacity: 10 to 12 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Classification: Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Alluvial flat remnants
Distinctive present vegetation: Black greasewood, shadscale

Inclusion 2
Classification: Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic
Positions on landscape: Ponded areas on alluvial flats
Distinctive present vegetation: Black greasewood, basin wildrye, inland saltgrass, Nuttall saltbush

Inclusion 3
Classification: Aquic Torriorthents, fine-silty, mixed (calcareous), mesic
Positions on landscape: Overwashed areas of alluvial flats
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Kelk Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Ocala Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Kelk Soil
Range seeding: Fair—too arid
Roadfill: Poor—low strength
Topsoil: Good
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—low strength, flooding
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Ocala Soil
Range seeding: Poor—excess salt, excess sodium
Roadfill: Poor—low strength
Topsoil: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Kelk soil—IW, irrigated, and IW, nonirrigated; Ocala soil—IIW, nonirrigated
Range site: Kelk soil—024X006N; Ocala soil—
024X007N; Inclusion 1—024X003N; Inclusion 2—
024X011N; Inclusion 3—028B003N

3840—Jung-Newpass association
Positions on landscape: Mountains

Composition
Major components:
Jung very cobbly loam, 15 to 30 percent slopes—45 percent
Newpass very gravelly fine sandy loam, 15 to 30 percent slopes—25 percent
Jung very cobbly fine sandy loam, 8 to 15 percent slopes—15 percent
Contrasting inclusions:
Haplic Durargids, clayey-skeletal, montmorillonitic, mesic, 8 to 30 percent slopes—7 percent
Durixerolic Haplargids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—6 percent
Rock outcrop—2 percent

Characteristics of the Jung Soil, Moderately Steep
Classification: Lithic Xerolic Haplargids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Convex side slopes of mountains
Parent material: Residuum derived from volcanic and metavolcanic rock
Slope: 15 to 30 percent
Elevation: 5,500 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

Typical Profile
Rock fragments on surface: 10 percent cobbles, 75 percent pebbles
Depth: 0 to 4 inches
Texture: Very gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Slightly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Characteristics of the Newpass Soil
Classification: Haploxerolic Nadurargids, fine, montmorillonitic, mesic
Positions on landscape: Concave side slopes of mountains
Parent material: Residuum derived from volcanic and metavolcanic rock
Slope: 15 to 30 percent
Elevation: 5,500 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Thurber needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 40 percent pebbles
Depth: 0 to 8 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Depth: 19 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Soil Survey
**Consistence:** Hard, firm  
**Reaction:** Moderately alkaline  
**Salinity:** 4 to 8 millimhos per centimeter  
**Sodicity (SAR):** 13 to 25  
**Depth:** 14 to 24 inches  
**Texture:** Very cobbly silty clay, very gravelly clay, gravelly clay  
**Structure:** Subangular blocky  
**Consistence:** Hard, firm  
**Reaction:** Strongly alkaline  
**Salinity:** 2 to 4 millimhos per centimeter  
**Sodicity (SAR):** 5 to 13  
**Depth:** 24 to 26 inches  
**Texture:** Cemented hardpan  
**Depth:** 26 inches  
**Kind of material:** Unweathered bedrock  

**Soil and Water Features**  
**Depth to the hardpan:** 20 to 29 inches  
**Depth to bedrock:** 21 to 36 inches  
**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Slow  
**Available water capacity:** 2.4 to 3.5 inches  
**Water-supplying capacity:** 9 inches  
**Runoff:** Medium  
**Hydrologic group:** C  
**Erosion factors (upper layer):** K value—0.15; T value—2; wind erodibility group—5  
**Hazard of erosion:** By water—slight; by wind—slight  
**Shrink-swell potential:** High  
**Corrosivity:** To steel—high; to concrete—low  
**Potential for frost action:** Low  

**Characteristics of the Jung Soil, Strongly Sloping**  
**Classification:** Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic  
**Positions on landscape:** Convex, south-facing shoulder slopes and upper back slopes of mountains  
**Parent material:** Residuum derived from volcanic and metavolcanic rock  
**Slope:** 8 to 15 percent  
**Elevation:** 5,500 to 7,000 feet  
**Average annual precipitation:** About 9 inches  
**Average annual air temperature:** About 48 degrees F  
**Frost-free season:** About 110 days  
**Dominant present vegetation:** Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush  

**Typical Profile**  
**Rock fragments on surface:** 20 percent cobbles, 20 percent pebbles  
**Depth:** 0 to 8 inches  
**Texture:** Very cobbly fine sandy loam  
**Structure:** Platy  
**Consistence:** Soft, very friable  
**Reaction:** Neutral  
**Depth:** 8 to 19 inches  
**Texture:** Very cobbly clay  
**Structure:** Prismatic  
**Consistence:** Very hard, firm  
**Reaction:** Moderately alkaline  
**Depth:** 19 inches  
**Kind of material:** Unweathered bedrock  

**Soil and Water Features**  
**Depth to bedrock:** 14 to 20 inches  
**Depth to a seasonal high water table:** More than 60 inches  
**Frequency of flooding:** None  
**Permeability:** Slow  
**Available water capacity:** 1.4 to 2.5 inches  
**Water-supplying capacity:** 8 inches  
**Runoff:** Rapid  
**Hydrologic group:** D  
**Erosion factors (upper layer):** K value—0.15; T value—1; wind erodibility group—8  
**Hazard of erosion:** By water—slight; by wind—slight  
**Shrink-swell potential:** Moderate  
**Corrosivity:** To steel—high; to concrete—low  
**Potential for frost action:** Low  

**Contrasting Inclusions**  
**Inclusion 1**  
**Classification:** Haplic Durargids, clayey-skeletal, montmorillonitic, mesic  
**Positions on landscape:** Side slopes of mountains  
**Distinctive present vegetation:** Shadscale, small rabbitbrush  

**Inclusion 2**  
**Classification:** Durixerollic Haplargids, loamy-skeletal, mixed, mesic  
**Positions on landscape:** Inset fans, colluvial fans  
**Distinctive present vegetation:** Wyoming big sagebrush, spiny hopsage, pine bluegrass  

**Inclusion 3**  
**Positions on landscape:** Rimrock  
**Distinctive present vegetation:** None  

**Major Current Uses**  
Livestock grazing, wildlife habitat  

**Suitability for Wildlife Habitat Elements**  
**Jung Soil, Moderately Steep**  
**Wild herbaceous plants (nonirrigated):** Fair  
** Shrubs (nonirrigated):** Fair
Newpass Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Jung Soil, Strongly Sloping
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Jung Soil, Moderately Steep
Range seeding: Poor—large stones, drouthy
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Newpass Soil
Range seeding: Poor—rooting depth, small stones, excess sodium
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, excess sodium
Daily cover for landfill: Poor—depth to rock, hard to pack, large stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—shrink-swell, low strength, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Jung Soil, Strongly Sloping
Range seeding: Poor—large stones, drouthy
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Jung and Newpass soils—VII, nonirrigated

Range site: Jung soils—027X032N; Newpass soil—027X008N; Inclusion 1—024X002N; Inclusion 2—027X008N; Inclusion 3—none

3841—Jung-Itca-Roca association
Positions on landscape: Mountains

Composition
Major components:
Jung very cobbly loam, 15 to 30 percent slopes—35 percent
Itca very cobbly loam, 15 to 30 percent slopes—25 percent
Roca very cobbly loam, 30 to 50 percent slopes—25 percent
Contrasting inclusions:
Lithic Xerollic Haplorgids, clayey-skeletal, mixed, mesic, 15 to 30 percent slopes—9 percent
Durixerollic Haplorgids, fine-loamy, mixed, mesic, 4 to 15 percent slopes—3 percent
Rock outcrop—3 percent

Characteristics of the Jung Soil
Classification: Lithic Xerollic Haplorgids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Convex, south- and west-facing lower side slopes of mountains
Parent material: Residuum derived from volcanic and metavolcanic rock
Slope: 15 to 30 percent
Elevation: 6,000 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

Typical Profile
Rock fragments on surface: 20 percent cobbles, 20 percent pebbles
Depth: 0 to 8 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 8 to 19 inches
Texture: Very cobbly clay
Structure: Prismatic
Consistence: Very hard, firm
Reaction: Moderately alkaline
Depth: 19 inches
Kind of material: Unweathered bedrock
Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Itca Soil

Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: The upper, south-facing side slopes of mountains
Parent material: Residuum derived from extrusive volcanic and pyroclastic rock
Slope: 15 to 30 percent
Elevation: 6,000 to 7,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush
Site index for singleleaf pinyon: 70

Typical Profile

Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 5 inches
Texture: Very cobbly loam
Structure: Prismatic
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.5 to 4.5 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—2;
wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Lithic Xerollic Hapludands, clayey-skeletal, mixed, mesic
Positions on landscape: The lower side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, Wyoming big sagebrush, bluegrass

Inclusion 2
Classification: Durixerollic Hapludands, fine-loamy, mixed, mesic
Positions on landscape: Concave toe slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Positions on landscape: Rimrock, scattered peaks
Distinctive present vegetation: None

Major Uses
Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Cordwood production

Suitability for Wildlife Habitat Elements

Jung Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Itca Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Roca Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Jung Soil
Range seeding: Poor—large stones, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones, thin layer

Itca Soil
Range seeding: Poor—droughty, large stones
Roadfill: Poor—depth to rock, large stones
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Roca Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Jung, Itca, and Roca soils—VIIs, nonirrigated
Range site: Jung soil—028B016N; Itca soil—025X061N; Roca soil—024X028N; Inclusion 1—025X014N; Inclusion 2—027X007N; Inclusion 3—none

3842—Jung-Hoopleite association

Positions on landscape: Foothills

Composition

Major components:
Jung very gravelly loam, 15 to 30 percent slopes—50 percent
Hoopleite very gravelly loam, 15 to 30 percent slopes—35 percent
Contrasting inclusions:
Xerollic Hapludands, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—8 percent
Rock outcrop—5 percent
Typic Hapludands, clayey-skeletal, montmorillonitic, mesic, 8 to 15 percent slopes—2 percent
Characteristics of the Jung Soil

Classification: Lithic Xerolic Haplavgids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Convex crests and south-facing slopes of foothills
Parent material: Residuum derived from volcanic and metavolcanic rock
Slope: 15 to 30 percent
Elevation: 5,900 to 6,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

Typical Profile

Rock fragments on surface: 10 percent cobbles, 45 percent pebbles
Depth: 0 to 4 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, firm
Reaction: Moderately alkaline

Depth: 4 to 8 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline

Depth: 8 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 6 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 0.5 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1;
wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Hooplite Soil

Classification: Lithic Xerolic Haplavgids, clayey-skeletal, mixed, mesic
Positions on landscape: Convex toe slopes of foothills
Parent material: Residuum derived from rhyolitic rock
Slope: 15 to 30 percent
Elevation: 5,900 to 6,600 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, black sagebrush

Typical Profile

Rock fragments on surface: 40 percent pebbles
Depth: 0 to 8 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral

Depth: 8 to 19 inches
Texture: Very cobbly clay
Structure: Prismatic
Consistence: Very hard, firm
Reaction: Moderately alkaline

Depth: 19 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1;
wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Xerolic Haplavgids, loamy-skeletal, mixed, mesic
Positions on landscape: Convex toe slopes of foothills
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 2
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 3
Classification: Typic Haplavgids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Jung Soil**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Hooplite Soil**
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

**Suitability and Limitations for Selected Uses**

**Jung Soil**
Range seeding: Poor—small stones, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Hooplite Soil**
Range seeding: Poor—droughty, small stones, depth to rock
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**
Land capability classification: Jung and Hooplite soils—VII, nonirrigated
Range site: Jung and Hooplite soils—028B016N; Inclusion 1—024X002N; Inclusion 2—none; Inclusion 3—024X002N

**3843—Jung-Newpass-Teguro association**

**Composition**
Major components:
Jung very cobbly loam, 15 to 30 percent slopes—40 percent
Newpass very gravelly fine sandy loam, 15 to 50 percent slopes—25 percent
Teguro very gravelly loam, 30 to 50 percent slopes—20 percent
Contrasting inclusions:
Itca very cobbly loam, 15 to 50 percent slopes—7 percent
Rock outcrop—5 percent
Lithic Xeric Torriorthenths, loamy-skeletal, mixed, mesic, 30 to 50 percent slopes—3 percent

**Characteristics of the Jung Soil**
Classification: Lithic Xerolic Haplargids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Convex, south-facing and lower, east-facing side slopes of mountains
Parent material: Residuum derived from volcanic and metavolcanic rock
Slope: 15 to 30 percent
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

**Typical Profile**
Rock fragments on surface: 25 percent cobbles, 20 percent pebbles
Depth: 0 to 8 inches
Texture: Very cobbly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Neutral
Depth: 8 to 19 inches
Texture: Very cobbly clay
Structure: Prismatic
Consistency: Very hard, firm
Reaction: Moderately alkaline
Depth: 19 inches
Kind of material: Unweathered bedrock

**Soil and Water Features**
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight  
Shrink-swell potential: Moderate  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Low

**Characteristics of the Newpass Soil**

*Classification:* Haploxerollic Nadvargids, fine, montmorillonitic, mesic  
*Positions on landscape:* The lower, north-facing and higher, east-facing side slopes of mountains  
*Parent material:* Residuum derived from volcanic and metavolcanic rock  
*Slope:* 15 to 50 percent  
*Elevation:* 6,300 to 7,000 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 48 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 3 percent stones and boulders, 75 percent pebbles  
*Depth:* 0 to 4 inches  
*Texture:* Very gravelly fine sandy loam  
*Structure:* Platy  
*Consistency:* Slightly hard, very friable  
*Reaction:* Mildly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5  
*Depth:* 4 to 14 inches  
*Texture:* Clay  
*Structure:* Prismatic  
*Consistency:* Hard, firm  
*Reaction:* Moderately alkaline  
*Salinity:* 4 to 8 millimhos per centimeter  
*Sodicity (SAR):* 13 to 25  
*Depth:* 14 to 24 inches  
*Texture:* Very cobbly silty clay, very gravelly clay, gravelly clay  
*Structure:* Subangular blocky  
*Consistency:* Hard, firm  
*Reaction:* Strongly alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13  
*Depth:* 24 to 26 inches  
*Kind of material:* Cemented hardpan  
*Depth:* 26 inches  
*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to the hardpan:* 20 to 29 inches  
*Depth to bedrock:* 21 to 36 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Slow  
*Available water capacity:* 2.6 to 3.2 inches  
*Water-supplying capacity:* 9 inches  
*Runoff:* Medium  
*Hydrologic group:* C  
*Erosion factors (upper layer):* K value—0.15; T value—2; wind erodibility group—5  
*Hazard of erosion:* By water—moderate; by wind—slight  
*Shrink-swell potential:* High  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

**Characteristics of the Teguro Soil**

*Classification:* Lithic Argoxerolls, loamy, mixed, frigid  
*Positions on landscape:* The higher, north-facing, convex side slopes of mountains  
*Parent material:* Residuum derived from tuff  
*Slope:* 30 to 50 percent  
*Elevation:* 7,000 to 8,000 feet  
*Average annual precipitation:* About 12 inches  
*Average annual air temperature:* About 45 degrees F  
*Frost-free season:* About 80 days  
*Dominant present vegetation:* Bluegrass, needlegrass, mountain big sagebrush, singleleaf pinyon, Utah juniper  
*Site index for common trees:* Singleleaf pinyon—30; Utah juniper—30

**Typical Profile**

*Rock fragments on surface:* 20 percent stones and boulders, 55 percent pebbles  
*Depth:* 0 to 6 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistency:* Slightly hard, very friable  
*Reaction:* Neutral  
*Depth:* 6 to 16 inches  
*Texture:* Gravelly loam, gravelly clay loam  
*Structure:* Subangular blocky  
*Consistency:* Slightly hard, friable  
*Reaction:* Neutral  
*Depth:* 16 inches  
*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 14 to 20 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderately slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—7
Hazards of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: High-lying, north-facing side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, singleleaf pinyon, Utah juniper, bluegrass

Inclusion 2
Positions on landscape: Rimrock
Distinctive present vegetation: None

Inclusion 3
Classification: Lithic Xeric Torriorthents, loamy-skeletal, mixed, mesic
Positions on landscape: Eroded, south-facing side slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush, small rabbitbrush, bluegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Jung Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Newpass Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor
Teguro Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Poor
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Jung Soil
Range seeding: Poor—stones, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope

Newpass Soil
Range seeding: Poor—rooting depth, large stones, excess sodium
Roadfill: Poor—depth to rock, shrink-swell, low strength
Topsoil: Poor—too clayey, small stones, excess sodium
Daily cover for landfill: Poor—depth to rock, hard to pack, large stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—shrink-swell, low strength, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Teguro Soil
Range seeding: Poor—small stones, droughty
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Jung, Newpass, and Teguro soils—Vlls, nonirrigated
Range site: Jung soil—027X032N; Newpass soil—027X008N; Teguro soil—025X062N; Inclusion 1—025X061N; Inclusion 2—none; Inclusion 3—024X054N

3845—Jung-Stingdorn-Atlow association
Positions on landscape: Foothills

Composition

Major components:
Jung very gravelly loam, 8 to 15 percent slopes—30 percent
Stingdorn extremely cobbly loam, 30 to 50 percent slopes—30 percent
Atlow very gravelly loam, 30 to 50 percent slopes—25 percent
Contrasting inclusions:
Xerolic Hapludargids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—5 percent
Haplic Natudargids, clayey-skeletal, montmorillonitic, mesic, shallow, 4 to 30 percent slopes—4 percent
Rock outcrop—3 percent
Rubble land—3 percent

Characteristics of the Jung Soil
Classification: Lithic Xerolic Hapludargids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Shoulder slopes and summits of foothills
Parent material: Residuum derived from volcanic and metavolcanic rock
Slope: 8 to 15 percent
Elevation: 5,100 to 6,100 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

Typical Profile
Rock fragments on surface: 40 percent cobbles, 30 percent pebbles
Depth: 0 to 8 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral

Depth: 8 to 19 inches
Texture: Very cobbly clay
Structure: Prismatic
Consistence: Very hard, firm
Reaction: Moderately alkaline

Depth: 19 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Stingdorn Soil
Classification: Typic Durudargids, loamy-skeletal, mixed, mesic, shallow
Positions on landscape: Slightly concave, south- and west-facing side slopes of foothills below areas of Rock outcrop
Parent material: Residuum derived from rhyolite, tuff, and andesite
Slope: 30 to 50 percent
Elevation: 5,100 to 6,100 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Typical Profile
Rock fragments on surface: 40 percent cobbles, 30 percent pebbles
Depth: 0 to 7 inches
Texture: Extremely cobbly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline

Depth: 7 to 15 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline

Depth: 15 to 20 inches
Kind of material: Indurated hardpan

Depth: 20 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to the hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 2.0 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low
Characteristics of the Atlow Soil

Classification: Lithic Xerollic Hapludaps, loamy-skeletal, mixed, mesic

Positions on landscape: Concave, north-facing side slopes of foothills

Parent material: Residuum derived from chert, argillite, shale, and altered tuff

Slope: 30 to 50 percent

Elevation: 5,800 to 6,200 feet

Average annual precipitation: About 10 inches

Average annual air temperature: About 46 degrees F

Frost-free season: About 110 days

Dominant present vegetation: Black sagebrush, bluegrass, Indian ricegrass

Typical Profile

Rock fragments on surface: 10 percent cobbles, 40 percent pebbles

Depth: 0 to 3 inches

Texture: Very gravelly loam

Structure: Platy

Consistency: Slightly hard, very friable

Reaction: Moderately alkaline

Salinity: 0 to 2 millimhos per centimeter

Depth: 3 to 14 inches

Texture: Very gravelly clay loam

Structure: Angular blocky

Consistency: Hard, friable

Reaction: Moderately alkaline

Salinity: 0 to 2 millimhos per centimeter

Depth: 14 inches

Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderately slow

Available water capacity: 1.1 to 1.8 inches

Water-supplying capacity: 8 inches

Runoff: Rapid

Hydrologic group: D

Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—7

Hazard of erosion: By water—severe; by wind—slight

Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—low

Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1

Classification: Xerollic Hapludgeneration, loamy-skeletal, mixed, mesic

Positions on landscape: Concave, east-facing, lower side slopes of foothills

Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2

Classification: Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow

Positions on landscape: Convex, lower side slopes of foothills

Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 3

Positions on landscape: Scattered peaks and rimrock

Distinctive present vegetation: None

Inclusion 4

Positions on landscape: Rock stripes below areas of Rock outcrop

Distinctive present vegetation: None

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Jung Soil

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

Stingdorn Soil

Wild herbaceous plants (nonirrigated): Poor

Shrubs (nonirrigated): Poor

Atlow Soil

Wild herbaceous plants (nonirrigated): Fair

Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Jung Soil

Range seeding: Poor—small stones, droughty

Roadfill: Poor—depth to rock

Topsoil: Poor—depth to rock, small stones, too clayey

Daily cover for landfill: Poor—depth to rock, small stones

Shallow excavations: Severe—depth to rock

Local roads and streets: Severe—depth to rock

Pond reservoir areas: Severe—depth to rock

Embankments, dikes, and levees: Severe—thin layer

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Stingdorn Soil

Range seeding: Poor—too arid, droughty, large stones

Roadfill: Poor—depth to rock, large stones, slope

Topsoil: Poor—depth to rock, cemented pan, large stones

Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, cemented pan, large stones
Local roads and streets: Severe—depth to rock, slope, large stones
Pond reservoir areas: Severe—depth to rock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Atlow Soil**

Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**

Land capability classification: Jung, Stingdorn, and Atlow soils—VIIa, nonirrigated
Range site: Jung and Atlow soils—024X030N; Stingdorn soils—024X002N; Inclusion-1—024X005N; Inclusion 2—024X002N; Inclusions 3 and 4—none

**3846—Jung-Atlow-McVegas association**

*Positions on landscape:* Foothills

**Composition**

Major components:
Jung very cobbly loam, 15 to 30 percent slopes—40 percent
Atlow very gravelly loam, 15 to 50 percent slopes—25 percent
McVegas very gravelly loam, 15 to 30 percent slopes—20 percent

Contrasting inclusions:
Rock outcrop—7 percent
Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 8 to 15 percent slopes—5 percent
Jung very cobbly fine sandy loam, 4 to 15 percent slopes—3 percent

**Characteristics of the Jung Soil**

Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic
*Positions on landscape:* Convex, broad side slopes of foothills

Parent material: Residuum derived from volcanic and metavolcanic rock
Slope: 15 to 30 percent
Elevation: 6,100 to 6,700 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

**Typical Profile**

Rock fragments on surface: 40 percent pebbles
Depth: 0 to 8 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 8 to 19 inches
Texture: Very cobbly clay
Structure: Prismatic
Consistence: Very hard, firm
Reaction: Moderately alkaline
Depth: 19 inches
Kind of material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

**Characteristics of the Atlow Soil**

Classification: Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic
*Positions on landscape:* North-facing side slopes of foothills

Parent material: Residuum derived from chert, argillite, and altered rhyolitic tuff
Slope: 15 to 50 percent
Elevation: 6,100 to 6,700 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 110 days  
Dominant present vegetation: Black sagebrush,  
bluegrass, Indian ricegrass  

Typical Profile  
Rock fragments on surface: 10 percent cobbles, 40  
percent pebbles  
Depth: 0 to 6 inches  
Texture: Very gravelly loam  
Structure: Platy  
Consistency: Slightly hard, very friable  
Reaction: Moderately alkaline  
Salinity: 0 to 2 millimhos per centimeter  
Depth: 6 to 15 inches  
Texture: Very gravelly clay loam  
Structure: Angular blocky  
Consistency: Hard, friable  
Reaction: Moderately alkaline  
Salinity: 0 to 2 millimhos per centimeter  
Depth: 15 inches  
Kind of material: Unweathered bedrock  

Soil and Water Features  
Depth to bedrock: 14 to 20 inches  
Depth to a seasonal high water table: More than 60  
inches  
Frequency of flooding: None  
Permeability: Moderately slow  
Available water capacity: 1.1 to 1.3 inches  
Water-supplying capacity: 8 inches  
Runoff: Rapid  
Hydrologic group: D  
Erosion factors (upper layer): K value—0.17; T value—1;  
winter erodibility group—7  
Hazard of erosion: By water—moderate; by wind—slight  
Shrink-swell potential: Low  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Moderate  

Characteristics of the McVegas Soil  
Classification: Haplic Nadurargids, clayey-skeletal,  
montmorillonitic, mesic, shallow  
Positions on landscape: South-facing side slopes of  
foothills  
Parent material: Residuum derived from volcanic and  
metavolcanic rock  
Slope: 15 to 30 percent  
Elevation: 6,100 to 6,700 feet  
Average annual precipitation: About 7 inches  
Average annual air temperature: About 49 degrees F  
Frost-free season: About 120 days  
Dominant present vegetation: Bottlebrush squirreltail,  
shadscale, bud sagebrush  

Typical Profile  
Rock fragments on surface: 5 percent cobbles, 50  
percent pebbles  
Depth: 0 to 5 inches  
Texture: Very gravelly loam  
Structure: Platy  
Consistency: Soft, very friable  
Reaction: Moderately alkaline  
Salinity: 0 to 4 millimhos per centimeter  
Sodicity (SAR): 2 to 10  
Depth: 5 to 19 inches  
Texture: Very cobbly clay  
Structure: Prismatic  
Consistency: Very hard, very firm  
Reaction: Strongly alkaline  
Salinity: 4 to 6 millimhos per centimeter  
Sodicity (SAR): 15 to 30  
Depth: 19 to 22 inches  
Kind of material: Cemented hardpan  
Depth: 22 inches  
Kind of material: Unweathered bedrock  

Soil and Water Features  
Depth to the hardpan: 14 to 20 inches  
Depth to bedrock: 15 to 23 inches  
Depth to a seasonal high water table: More than 60  
inches  
Frequency of flooding: None  
Permeability: Slow  
Available water capacity: 1.4 to 3.0 inches  
Water-supplying capacity: 8 inches  
Runoff: Rapid  
Hydrologic group: D  
Erosion factors (upper layer): K value—0.20; T value—1;  
winter erodibility group—8  
Hazard of erosion: By water—moderate; by wind—slight  
Shrink-swell potential: Moderate  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Low  

Contrasting Inclusions  
Inclusion 1  
Positions on landscape: Scattered peaks  
Distinctive present vegetation: None  

Inclusion 2  
Classification: Durixerollic Haplargids, loamy-skeletal,  
mixed, mesic  
Positions on landscape: Concave toe slopes of foothills  
Distinctive present vegetation: Wyoming big sagebrush,  
bluegrass
Inclusion 3
Classification: Lithic Xerollic Haplorgids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Crests and shoulder slopes of foothills
Distinctive present vegetation: Black sagebrush, skakweed, bluegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Jung Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Atlow Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

McVegas Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Jung Soil
Range seeding: Poor—large stones, dryness
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, cemented pan, slope
Embankments, dikes, and levees: Severe—excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Atlow Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

McVegas Soil
Range seeding: Poor—too arid, small stones, dryness
Roadfill: Poor—depth to rock, low strength
Topsoil: Poor—depth to rock, cemented pan, too clayey
Daily cover for landfill: Poor—depth to rock, hard to pack, large stones
Shallow excavations: Severe—depth to rock, cemented pan, slope
Local roads and streets: Severe—depth to rock, low strength, slope
Pond reservoir areas: Severe—depth to rock, cemented pan, slope
Embankments, dikes, and levees: Severe—excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Jung, Atlow, and McVegas soils—VIIa, nonirrigated
Range site: Jung soil—028B016N; Atlow soil—024X030N; McVegas soil—028B017N; Inclusion 1—none; Inclusion 2—024X005N; Inclusion 3—027X032N

3847—Jung-Old Camp-Clanalpine association

Positions on landscape: Mountains

Composition

Major components:
Jung very gravelly loam, 30 to 50 percent slopes—35 percent
Old Camp very cobbly loam, 30 to 50 percent slopes—30 percent
Clanalpine very gravelly loam, 30 to 50 percent slopes—20 percent
Contrasting inclusions:
Rock outcrop—6 percent
Colbar cobbly loam, 30 to 50 percent slopes—5 percent
McVegas stony loam, 15 to 30 percent slopes—4 percent

Characteristics of the Jung Soil

Classification: Lithic Xerollic Haplorgids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: Convex, south-facing side slopes of mountains
Parent material: Residuum derived from volcanic and metavolcanic rock
Slope: 30 to 50 percent
Elevation: 6,300 to 6,700 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

Typical Profile

Rock fragments on surface: 40 percent pebbles
Depth: 0 to 8 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 8 to 19 inches
Texture: Very cobbly clay
Structure: Prismatic
Consistence: Very hard, firm
Reaction: Moderately alkaline
Depth: 19 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1;
wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Old Camp Soil
Classification: Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Convex, lower side slopes of mountains
Parent material: Residuum derived from basalt and andesite
Slope: 30 to 50 percent
Elevation: 6,300 to 6,700 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Thurber needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 2 inches
Texture: Very cobbly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Depth: 2 to 14 inches
Texture: Very gravelly loam, very cobbly clay loam
Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Depth: 14 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.9 to 1.2 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1;
wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Clan Alpine Soil
Classification: Typic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Slightly concave, north-facing side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolite and andesitic tuff
Slope: 30 to 50 percent
Elevation: 6,300 to 6,700 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper
Site index for singleleaf pinyon: 75

Typical Profile
Rock fragments on surface: 5 percent stones and boulders, 10 percent cobbles, 35 percent pebbles
Depth: 0 to 10 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 10 to 39 inches
Texture: Very gravelly clay loam, very cobbly loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Mild, friable
Depth: 39 inches
Kind of material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3 to 6 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.17; T value—2;
wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Suitability and Limitations for Selected Uses

Jung Soil
Range seeding: Poor—small stones, droughty
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Old Camp Soil
Range seeding: Poor—large stones, droughty
Roadfill: Poor—depth to rock, large stones, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope, large stones
Local roads and streets: Severe—depth to rock, slope, large stones
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Clan Alpine Soil
Range seeding: Poor—small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Jung, Old Camp, and Clan Alpine soils—VII, nonirrigated
Range site: Jung soil—027X032N; Old Camp soil—027X007N; Clan Alpine soil—025X061N; Inclusion 1—one; Inclusion 2—027X011N; Inclusion 3—027X028N

3848—Jung-McVegas-Enko association
Positions on landscape: Foothills

Contrasting Inclusions

Inclusion 1
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 2
Classification: Xerolic Hapludolls, fine-loamy, mixed, mesic
Positions on landscape: Concave, south-facing side slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush, needlegrass, bluegrass

Inclusion 3
Classification: Haplic Nadurudolls, clayey-skeletal, montmorillonitic, mesic, shallow
Positions on landscape: Convex, south-facing intermediate side slopes of mountains
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Jung Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Old Camp Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Clan Alpine Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Composition

Major components:
Jung very gravelly loam, 15 to 30 percent slopes—50 percent
McVegas very gravelly loam, 8 to 15 percent slopes—20 percent
Enko gravelly fine sandy loam, 2 to 8 percent slopes—15 percent

Contrasting inclusions:
Duric Natrargids, fine-loamy, mixed, mesic, 4 to 15 percent slopes—5 percent
Durixerollic Haplargids, loamy-skeletal, mixed, mesic, 4 to 15 percent slopes—5 percent
Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic, 8 to 30 percent slopes—4 percent
Rock outcrop—1 percent

Characteristics of the Jung Soil

Classification: Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic
Positions on landscape: North- and east-facing side slopes of foothills
Parent material: Residuum derived from volcanic and metavolcanic rock
Slope: 15 to 30 percent
Elevation: 6,200 to 6,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Indian ricegrass, black sagebrush, small rabbitbrush

Typical Profile

Rock fragments on surface: 40 percent pebbles
Depth: 0 to 8 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Neutral
Depth: 8 to 19 inches
Texture: Very cobbly clay
Structure: Prismatic
Consistence: Very hard, firm
Reaction: Moderately alkaline
Depth: 19 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 2.5 inches

Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the McVegas Soil

Classification: Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow
Positions on landscape: South-facing side slopes of foothills
Parent material: Residuum derived from volcanic and metavolcanic rock
Slope: 8 to 15 percent
Elevation: 6,200 to 6,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Typical Profile

Rock fragments on surface: 5 percent cobbles, 50 percent pebbles
Depth: 0 to 5 inches
Texture: Very gravelly loam
Structure: Platy
Consistence: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 2 to 10
Depth: 5 to 19 inches
Texture: Very cobbly clay
Structure: Prismatic
Consistence: Very hard, very firm
Reaction: Strongly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 15 to 30
Depth: 19 to 22 inches
Kind of material: Cemented hardpan
Depth: 22 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to the hardpan: 14 to 20 inches
Depth to bedrock: 15 to 23 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 2.6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.20; T value—1;
wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Enko Soil

Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Toe slopes, inset fan remnants between foothills
Parent material: Mixed alluvium that includes loess and ash
Slope: 2 to 8 percent
Elevation: 6,200 to 6,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile

Depth: 0 to 6 inches
Texture: Gravelly fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter

Depth: 6 to 18 inches
Texture: Loam, sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Depth: 18 to 60 inches
Texture: Fine sandy loam, loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.1 to 8.2 inches
Water-supplying capacity: 8 inches

Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—5;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Duric Natargids, fine-loamy, mixed, mesic
Positions on landscape: Fan piedmont remnants bordering foothills
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Classification: Durixerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan aprons bordering foothills
Distinctive present vegetation: Black sagebrush, bottlebrush squirreltail

Inclusion 3
Classification: Lithic Xerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Crests and shoulder slopes of foothills
Distinctive present vegetation: Wyoming big sagebrush, needlegrass

Inclusion 4
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Jung Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

McVegas Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Enko Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Jung Soil
Range seeding: Poor—small stones, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Poor—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

McVegas Soil
Range seeding: Poor—too arid, small stones, droughty
Roadfill: Poor—depth to rock, low strength
Topsoil: Poor—depth to rock, cemented pan, too clayey
Daily cover for landfill: Poor—depth to rock, hard to pack, large stones
Shallow excavations: Severe—depth to rock, cemented pan
Local roads and streets: Severe—depth to rock, low strength
Pond reservoir areas: Severe—depth to rock, cemented pan, slope
Embankments, dikes, and levees: Severe—excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Enko Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Jung and McVegas soils—Vlls, nonirrigated; Enko soil—IVe, irrigated, and Vlls, nonirrigated
Range site: Jung soil—024X030N; McVegas soil—024X002N; Enko soil—028B010N; Inclusion 1—024X002N; Inclusion 2—024X030N; Inclusion 3—028B010N; Inclusion 4—none

3851—Decram-Hapgood association
Positions on landscape: Mountains
Composition

Decram: Extremely gravelly loam, 15 to 30 percent slopes—30 percent
Hapgood: Gravelly loam, 30 to 50 percent slopes—20 percent
Contrasting inclusions:
Aridic Haploxerolls, loamy-skeletal, mixed, frigid—9 percent
Rock outcrop—3 percent
Rubble land—2 percent
Entic Cryumbrepts, loamy-skeletal, mixed—1 percent

Characteristics of the Decram Soil, Moderately Steep
Classification: Typic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Crests and the upper side slopes of mountains
Parent material: Residueum derived from quartzite, chert, and volcanic rock
Slope: 15 to 30 percent
Elevation: 7,800 to 8,600 feet
Average annual precipitation: About 18 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 40 days
Dominant present vegetation: Low sagebrush, bluegrass, Idaho fescue

Typical Profile
Rock fragments on surface: 10 percent cobbles, 60 percent pebbles
Depth: 0 to 11 inches
Texture: Extremely gravelly loam
Structure: Granular
Consistency: Soft, very friable
Reaction: Neutral
Depth: 11 to 28 inches
Texture: Very gravelly loam, very cobbly loam
Structure: Angular blocky
Consistency: Slightly hard, firm
Depth: 28 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.8 to 2.4 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.05; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Decram Soil, Steep**

Classification: Typic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: The lower side slopes of mountains
Parent material: Residuum derived from quartzite, chert, and volcanic rock
Slope: 30 to 50 percent
Elevation: 7,800 to 8,600 feet
Average annual precipitation: About 18 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Low sagebrush, bluegrass, Idaho fescue

**Typical Profile**

Rock fragments on surface: 10 percent cobbles, 40 percent pebbles
Depth: 0 to 11 inches
Texture: Very gravelly loam
Structure: Granular
Consistence: Soft, very friable
Reaction: Neutral
Depth: 11 to 28 inches
Texture: Very gravelly loam, very cobbly loam
Structure: Angular blocky
Consistence: Slightly hard, firm
Depth: 28 inches
Kind of material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.2 to 3.5 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.10; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Parent material**: Colluvium that includes loess and volcanic ash
Slope: 30 to 50 percent
Elevation: 7,800 to 8,600 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

**Typical Profile**

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 17 to 40 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 40 to 60 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Neutral

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.4 inches
Water-supplying capacity: 16 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

**Contrasting Inclusions**

**Inclusion 1**

Classification: Aridic Haploxerolls, loamy-skeletal, mixed, frigid
Positions on landscape: South-facing, lower side slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, mountain big sagebrush
Inclusion 2
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 3
Positions on landscape: Side slopes of mountains
Distinctive present vegetation: None

Inclusion 4
Classification: Entic Cryumbrepts, loamy-skeletal, mixed
Positions on landscape: North-facing snow pockets
below areas of Rock outcrop
Distinctive present vegetation: Needlegrass, bluebunch
wheatgrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Decram Soil, Moderately Steep
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Decram Soil, Steep
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Hapgood Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Decram Soil, Moderately Steep
Range seeding: Poor—small stones, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small
stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Decram Soil, Steep
Range seeding: Poor—small stones, droughty
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small
stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Hapgood Soil
Range seeding: Poor—erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large
stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Decram soils—VIIc,
nonirrigated; Hapgood soil—VIIIe, nonirrigated
Range site: Decram soil, moderately steep—024X016N;
Decram soil, steep—024X027N; Hapgood soil—
024X032N; Inclusion 1—024X029N; Inclusions 2
and 3—none; Inclusion 4—024X028N

3852—Decram-Hapgood-Chad association
Positions on landscape: Mountains

Composition
Major components:
Decram very gravelly loam, 15 to 30 percent slopes, 40
percent
Hapgood gravelly loam, 15 to 30 percent slopes—30
percent
Chad cobbly loam, 30 to 50 percent slopes—15 percent
Contrasting inclusions:
Argic Pachic Cryoborolls, loamy-skeletal, mixed, 8 to 30
percent slopes—7 percent
Rock outcrop—4 percent
Cumulic Cryaquolls, loamy-skeletal, mixed, 2 to 8
percent slopes, drained—3 percent
Cumulic Cryaquolls, loamy-skeletal, mixed, 2 to 8
percent slopes—1 percent

Characteristics of the Decram Soil
Classification: Typic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Crests and the upper side
slopes of mountains
Parent material: Residuum derived from quartzite, chert,
and volcanic rock
Slope: 15 to 30 percent
Elevation: 7,000 to 9,000 feet
Average annual precipitation: About 18 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 40 days
Dominant present vegetation: Low sagebrush,
bluegrass, Idaho fescue
Typical Profile

Rock fragments on surface: 10 percent stones, 10 percent cobbles, 40 percent pebbles

Depth: 0 to 11 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 11 to 28 inches
Texture: Very gravelly loam, very cobbly loam
Structure: Angular blocky
Consistency: Slightly hard, firm

Depth: 28 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.2 to 3.5 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: C

Erosion factors (upper layer): K value—0.24; T value—5;
wind erodibility group—6

Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Chad Soil

Classification: Aridic Argixerolls, fine, mixed, frigid
Positions on landscape: South-facing side slopes of mountains
Parent material: Residuum derived from chert and shale
Slope: 30 to 50 percent
Elevation: 7,000 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: Above 44 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Bluebunch wheatgrass, Thurber needlegrass, mountain big sagebrush

Typical Profile

Rock fragments on surface: 10 percent pebbles

Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 17 to 40 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 40 to 60 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Massive
Consistency: Soft, very friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.4 inches
Water-supplying capacity: 16 inches
Runoff: Rapid
Hydrologic group: B

Erosion factors (upper layer): K value—0.24; T value—5;
wind erodibility group—6

Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Hapgood Soil

Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: North-facing side slopes of mountains
Parent material: Colluvium that includes loess and volcanic ash
Slope: 15 to 30 percent
Elevation: 7,000 to 9,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, mountain brome, bluegrass, mountain big sagebrush, serviceberry

Typical Profile

Rock fragments on surface: 10 percent pebbles

Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 17 to 42 inches
Texture: Gravelly clay, clay
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline

Depth: 42 inches
Kind of material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.5 to 7.0 inches
Water-supplying capacity: 13 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.28; T value—3; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Classification: Argic Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Concave, north-facing, upper side slopes of mountains
Distinctive present vegetation: chokecherry, serviceberry

Inclusion 2
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 3
Classification: Cumulic Cryaquolls, loamy-skeletal, mixed
Positions on landscape: Entrenched areas of intermountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 4
Classification: Cumulic Cryaquolls, loamy-skeletal, mixed
Positions on landscape: Narrow, smooth intermountain drainageways
Distinctive present vegetation: Willow, sedge, tufted hairgrass, bluegrass

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Decram Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Hapgood Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Decram Soil
Range seeding: Poor—small stones, doughty
Roadfill: Poor—depth to rock
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Hapgood Soil
Range seeding: Fair—erodes easily
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Chad Soil
Range seeding: Poor—erodes easily
Roadfill: Poor—slope, shrink-swell
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—too clayey, hard to pack, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—shrink-swell, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—hard to pack
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Decram soil—VII, nonirrigated; Hapgood soil—Vile, nonirrigated; Chad soil—Vile, nonirrigated
Range site: Decram soil—028B038N; Hapgood soil—028B029N; Chad soil—028B027N; Inclusion 1—028B026N; Inclusion 2—none; Inclusion 3—028B024N; Inclusion 4—025X005N

3861—Duco-Itca-Roca association
Positions on landscape: Mountains
Composition

Major components:
Duco very cobbly loam, 30 to 50 percent slopes—45 percent
Itca very gravelly loam, 30 to 50 percent slopes—25 percent
Roca very cobbly loam, 30 to 50 percent slopes—15 percent
Contrasting inclusions:
Rock outcrop—6 percent
Typic Argixerolls, loamy-skeletal, mixed, frigid, 15 to 50 percent slopes—5 percent
Cumulic Haploxerolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—4 percent

Characteristics of the Duco Soil

Classification: Lithic Argixerolls, loamy-skeletal, mixed, mesic
Positions on landscape: Convex crests and the upper side slopes of mountains
Parent material: Residual derived from rhyolite and andesite
Slope: 30 to 50 percent
Elevation: 5,800 to 7,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Singleleaf pinyon, Utah juniper, antelope bitterbrush, mountain big sagebrush
Site index for common trees: Singleleaf pinyon—35; Utah juniper—35

Typical Profile

Rock fragments on surface: 20 percent cobbles, 20 percent pebbles
Depth: 0 to 6 inches
Texture: Very cobbly loam
Structure: Granular
Consistency: Soft, very friable
Reaction: Neutral

Depth: 6 to 15 inches
Texture: Very gravelly clay loam, very cobbly clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Neutral

Depth: 15 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 to 2.2 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1;
wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Itca Soil

Classification: Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: Convex, north- and east-facing side slopes of mountains
Parent material: Residual derived from extrusive volcanic and pyroclastic rock
Slope: 30 to 50 percent
Elevation: 5,800 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Idaho fescue, bluegrass, singleleaf pinyon, Utah juniper, mountain big sagebrush
Site index for singleleaf pinyon: 70

Typical Profile

Rock fragments on surface: 5 percent cobbles, 40 percent pebbles
Depth: 0 to 9 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 9 to 17 inches
Texture: Very cobbly clay, very gravelly clay loam
Structure: Prismatic
Consistency: Hard, firm
Reaction: Mildly alkaline

Depth: 17 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 0.9 to 2.2 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1; wind erodibility group—B
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Roca Soil
Classification: Xerolic Haplargids, clayey-skeletal, montmorillonitic, frigid
Positions on landscape: South-facing side slopes of mountains
Parent material: Residuum derived from shale and chert
Slope: 30 to 50 percent
Elevation: 5,800 to 7,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Bluegrass, bluebunch wheatgrass, big sagebrush

Typical Profile
Rock fragments on surface: 30 percent cobbles, 20 percent pebbles
Depth: 0 to 4 inches
Texture: Very cobbly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Depth: 4 to 24 inches
Texture: Very gravelly clay loam, very gravelly clay
Structure: Angular blocky
Consistence: Hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 24 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.1 to 4.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—2; wind erodibility group—B
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions
Inclusion 1
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 2
Classification: Typic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Concave snow pockets on north aspects of mountains
Distinctive present vegetation: Idaho fescue, mountain big sagebrush, needlegrass

Inclusion 3
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Current Uses
Livestock grazing, wildlife habitat, cordwood production

Suitability for Wildlife Habitat Elements
Duco Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Poor
Shrubs (nonirrigated): Fair

Itca Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Roca Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses
Duco Soil
Range seeding: Poor—large stones, droughty
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones, thin layer
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Itca Soil
Range seeding: Poor—droughty, small stones
Lander County, Nevada, South Part

Roadfill: Poor—depth rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Roca Soil
Range seeding: Poor—large stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Duco, Itca, and Roca soils—Vlls, nonirrigated
Range site: Duco soil—025X062N; Itca soil—025X061N;
Roca soil—024X028N; Inclusion 1—none; Inclusion 2—028B030N; Inclusion 3—028B024N

3863—Duco-Clanalpine-Jung association
Positions on landscape: Mountains

Composition

Major components:
Duco stony loam, 15 to 30 percent slopes—45 percent
Clanalpine very gravelly loam, 30 to 50 percent slopes—25 percent
Jung very gravelly loam, 15 to 30 percent slopes—15 percent

Contrasting inclusions:
Rock outcrop—7 percent
Aridic Haploxerolls, loamy-skeletal, mixed, frigid, 2 to 8 percent slopes—5 percent
Old Camp very stony loam, 15 to 30 percent slopes—3 percent

Characteristics of the Duco Soil
Classification: Lithic Argixerolls, loamy-skeletal, mixed, mesic
Positions on landscape: Concave, lower side slopes and south-facing, upper side slopes and crests of mountains

Parent material: Residuum derived from rhyolite and andesite
Slope: 15 to 30 percent
Elevation: 6,500 to 7,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Singleleaf pinyon, Utah juniper, antelope bitterbrush, mountain big sagebrush
Site index for common trees: Singleleaf pinyon—35; Utah juniper—35

Typical Profile
Rock fragments on surface: 10 percent stones and boulders, 15 percent cobbles, 20 percent pebbles
Depth: 0 to 7 inches
Texture: Stony loam
Structure: Granular
Consistence: Soft, very friable
Reaction: Neutral
Depth: 7 to 19 inches
Texture: Very gravelly clay loam, very cobbly clay loam
Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Neutral
Depth: 19 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 to 2.0 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.28; T value—1;
wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Clanalpine Soil
Classification: Typic Argixerolls, loamy-skeletal, mixed, frigid
Positions on landscape: The upper side slopes of mountains
Parent material: Colluvium and residuum derived from rhyolitic and andesitic tuff
Slope: 30 to 50 percent
Elevation: 6,500 to 7,600 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 70 days
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, Utah juniper
Site index for singleleaf pinyon: 75

Typical Profile
Rock fragments on surface: 10 percent cobbles, 40 percent pebbles
Depth: 0 to 10 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral

Depth: 10 to 39 inches
Texture: Very gravelly clay loam, very cobbly loam
Structure: Angular blocky
Consistency: Hard, friable
Reaction: Mildly alkaline

Depth: 39 inches
Kind of material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.6 to 5.0 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 2
Classification: Aridic Haploxerolls, loamy-skeletal, mixed, frigid
Positions on landscape: Intermountain drainageways
Distinctive present vegetation: Wyoming big sagebrush, needlegrass

Inclusion 3
Classification: Lithic Xerollic Hapludolls, loamy-skeletal, mixed, mesic
Positions on landscape: The lower, north-facing side slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush, needlegrass, bluegrass
Major Current Uses
Livestock grazing, wildlife habitat, cordwood production

Suitability for Wildlife Habitat Elements

Duco Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Poor
Shrubs (nonirrigated): Fair

Clalanpine Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Jung Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Duco Soil
Range seeding: Poor—large stones, droughty
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for land fill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones, thin layer
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Clalanpine Soil
Range seeding: Poor—small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for land fill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Jung Soil
Range seeding: Poor—small stones, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for land fill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Duco soil—VIIe, nonirrigated; Clalanpine and Jung soils—VIIIs, nonirrigated
Range site: Duco soil—025X062N; Clalanpine soil—025X061N; Jung soil—027X032N; Inclusion 1—none; Inclusion 2—027X008N; Inclusion 3—027X007N

3881—Layview-Packer-Hapgood association

Composition
Major components:
Layview extremely cobbly loam, 4 to 15 percent slopes—40 percent
Packer gravelly loam, 15 to 30 percent slopes—30 percent
Hapgood gravelly loam, 15 to 30 percent slopes—15 percent
Contrasting inclusions:
Packer very cobbly loam, 8 to 15 percent slopes—7 percent
Argic Lithic Cryorollsoils, loamy-skeletal, mixed, 15 to 30 percent slopes—5 percent
Rock outcrop—2 percent
Rubble land—1 percent

Characteristics of the Layview Soil
Classification: Argic Lithic Cryorollsoils, loamy-skeletal, mixed
Positions on landscape: Windswept crests and shoulder slopes of mountains
Parent material: Residuum derived from andesite, rhyolite, and tuff
Slope: 4 to 15 percent
Elevation: 8,000 to 10,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, bluegrass, low sagebrush, black sagebrush

Typical Profile
Rock fragments on surface: 35 percent cobbles, 25 percent pebbles
Depth: 0 to 3 inches
Texture: Extremely cobbly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Neutral
Depth: 3 to 12 inches
Texture: Very gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 12 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 to 1.4 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Packer Soil
Classification: Argic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Convex side slopes of mountains
Parent material: Mixed residuum that includes loess and volcanic ash
Slope: 15 to 30 percent
Elevation: 8,000 to 10,000 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, needlegrass, snowberry, bluegrass, mountain big sagebrush

Typical Profile
Rock fragments on surface: 25 percent pebbles
Depth: 0 to 10 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Neutral

Depth: 10 to 21 inches
Texture: Extremely cobbly clay loam, extremely cobbly loam
Structure: Angular blocky
Consistence: Hard, friable
Reaction: Neutral

Depth: 21 to 60 inches

Texture: Extremely cobbly sandy loam, extremely cobbly loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Neutral

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 6 to 8 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.20; T value—3; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Hapgood Soil
Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Concave side slopes of mountains
Parent material: Colluvium that includes loess and volcanic ash
Slope: 15 to 30 percent
Elevation: 8,000 to 10,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, needlegrass, snowberry, bluegrass, mountain big sagebrush

Typical Profile
Rock fragments on surface: 10 percent pebbles
Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 17 to 40 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 40 to 60 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Neutral
Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 6.0 to 7.5 inches
Water-supplying capacity: 16 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Argic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Convex, windswept crests and shoulder slopes of mountains
Distinctive present vegetation: Black sagebrush, low sagebrush, bluegrass

Inclusion 2
Classification: Argic Lithic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: Sheltered crests, shoulder slopes, and back slopes of mountains
Distinctive present vegetation: Black sagebrush, Idaho fescue

Inclusion 3
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Inclusion 4
Positions on landscape: Rock stripes below areas of Rock outcrop
Distinctive present vegetation: None

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Layview Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Packer Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Hapgood Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Layview Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Packer Soil
Range seeding: Fair—erodes easily, small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Hapgood Soil
Range seeding: Fair—erodes easily, small stones
Roadfill: Poor—slope
Topsoil: Poor—small stones, area reclaim, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Layview soil—VIIa, nonirrigated; Packer and Hapgood soils—Vlie, nonirrigated
Range site: Layview soil—024X016N; Packer soil—028B037N; Hapgood soil—024X032N; Inclusion 1—024X016N; Inclusion 2—024X042N; Inclusions 3 and 4—none

3891—Labshaft-Hapgood-Rock outcrop association

Positions on landscape: Mountains
Composition

Major components:
Labshaft extremely stony loam, 30 to 50 percent slopes—45 percent
Hapgood gravelly loam, 30 to 50 percent slopes—25 percent
Rock outcrop—15 percent
Contrasting inclusions:
Layview very cobbly loam, 8 to 15 percent slopes—7 percent
Pachic Cryoborolls, loamy-skeletal, mixed, 15 to 30 percent slopes—5 percent
Cumulic Haploxerolls, fine-loamy, mixed, frigid, 4 to 15 percent slopes—3 percent

Characteristics of the Labshaft Soil

Classification: Lithic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: The upper side slopes of mountains
Parent material: Residue derived from siliceous rock
Slope: 30 to 50 percent
Elevation: 7,800 to 8,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Curleaf mahogany, mountain big sagebrush, needlegrass

Typical Profile

Rock fragments on surface: 30 percent stones and boulders, 30 percent cobbles, 10 percent pebbles
Depth: 0 to 8 inches
Texture: Extremely stony loam
Structure: Granular
Consistence: Soft, very friable
Reaction: Neutral

Depth: 8 to 15 inches
Texture: Extremely gravelly loam
Structure: Angular blocky
Consistence: Slightly hard, friable
Reaction: Neutral

Depth: 15 inches
Kind of material: Unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 to 2.0 inches
Water-supplying capacity: 12 inches

Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.10; T value—1;
wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Hapgood Soil

Classification: Pachic Cryoborolls, loamy-skeletal, mixed
Positions on landscape: The intermediate and lower side slopes of mountains
Parent material: Colluvium that includes loess and volcanic ash
Slope: 30 to 50 percent
Elevation: 7,800 to 8,500 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days
Dominant present vegetation: Idaho fescue, mountain brome, mountain big sagebrush, serviceberry

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 17 inches
Texture: Gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 17 to 40 inches
Texture: Very gravelly loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral

Depth: 40 to 60 inches
Texture: Very cobbly loam, very gravelly loam
Structure: Massive
Consistence: Soft, very friable
Reaction: Neutral

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.4 inches
Water-supplying capacity: 16 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5;
wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Rock Outcrop**

*Positions on landscape:* Scattered peaks and cliffs
*Dominant present vegetation:* None

**Contrasting Inclusions**

**Inclusion 1**
*Classification:* Argic Lithic Cryoborolls, loamy-skeletal, mixed
*Positions on landscape:* Crests of mountains
*Distinctive present vegetation:* Low sagebrush, black sagebrush, bluegrass

**Inclusion 2**
*Classification:* Pachic Cryoborolls, loamy-skeletal, mixed
*Positions on landscape:* The lower, north-facing side slopes of mountains
*Distinctive present vegetation:* Chokecherry, snowberry, currant

**Inclusion 3**
*Classification:* Cumulic Haploxerolls, fine-loamy, mixed, frigid
*Positions on landscape:* Intermountain drainageways
*Distinctive present vegetation:* Aspen, willow, rose, iris, sedge, bluegrass

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Labshaft Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Hapgood Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Suitability and Limitations for Selected Uses**

**Labshaft Soil**
*Range seeding:* Poor—large stones, droughty
*Roadfill:* Poor—depth to rock, slope
*Topsoil:* Poor—depth to rock, small stones, slope
*Daily cover for landfill:* Poor—depth to rock, small stones, slope
*Shallow excavations:* Severe—depth to rock, slope
*Local roads and streets:* Severe—depth to rock, slope
*Pond reservoir areas:* Severe—depth to rock, slope
*Embankments, dikes, and levees:* Severe—large stones
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Hapgood Soil**
*Range seeding:* Poor—erodes easily
*Roadfill:* Poor—slope
*Topsoil:* Poor—small stones, area reclaim, slope
*Daily cover for landfill:* Poor—small stones, slope
*Shallow excavations:* Severe—slope
*Local roads and streets:* Severe—slope
*Pond reservoir areas:* Severe—slope
*Embankments, dikes, and levees:* Moderate—large stones
*Sand:* Improbable source—excess fines
*Gravel:* Improbable source—excess fines

**Interpretive Groups**

**Land capability classification:** Labshaft soil—VII, nonirrigated; Hapgood soil—VII, nonirrigated; Rock outcrop—VIII, nonirrigated
*Range site:* Labshaft soil—028B043N; Hapgood soil—024X032N; Rock outcrop—none; Inclusion 1—024X016N; Inclusion 2—024X032N; Inclusion 3—none

**3950—Hoozite-Jung-Ilzod association**

**Composition**

**Major components:**
*Hoozite* very gravelly loam, 30 to 50 percent slopes—50 percent
*Jung* very gravelly loam, 4 to 15 percent slopes—20 percent
*Ilzod* very cobbly loam, 30 to 75 percent slopes—15 percent

**Contrasting inclusions:**
*Lithic Xerolic Haplorgids,* loamy-skeletal, mixed, mesic, 30 to 50 percent slopes—5 percent
*Xerolic Haplorgids,* fine, montmorillonitic, mesic, 15 to 30 percent slopes—4 percent
*Lithic Torriorthents,* clayey-skeletal, montmorillonitic (calcareous), mesic, 30 to 75 percent slopes—3 percent
*Rock outcrop*—3 percent

**Characteristics of the Hoozite Soil**

**Classification:** Lithic Xerolic Haplorgids, loamy-skeletal, mixed, mesic
*Positions on landscape:* South-facing side slopes of mountains
*Parent material:* Residuum derived from rhyolitic rock
*Slope:* 30 to 50 percent
*Elevation:* 6,200 to 6,600 feet
*Average annual precipitation:* About 8 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 110 days
**Dominant present vegetation:** Bottlebrush squirreltail, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 10 percent cobbles, 45 percent pebbles  
*Depth:* 0 to 4 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, firm  
*Reaction:* Mildly alkaline  
*Depth:* 4 to 8 inches  
*Texture:* Very gravelly loam, very gravelly clay loam  
*Structure:* Subangular blocky  
*Consistence:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Depth:* 8 inches  
*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 6 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 0.5 to 1.5 inches  
*Water-supplying capacity:* 8 inches  
*Runoff:* Rapid  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.17; T value—1; wind erodibility group—6  
*Hazard of erosion:* By water—severe; by wind—slight  
*Shrink-swell potential:* Moderate  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Moderate

**Characteristics of the Izod Soil**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic  
*Positions on landscape:* Convex, east-facing, eroded side slopes of mountains  
*Parent material:* Residuum and colluvium derived from limestone  
*Slope:* 30 to 75 percent  
*Elevation:* 6,200 to 6,600 feet  
*Average annual precipitation:* About 9 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 110 days  
*Dominant present vegetation:* Bluegrass, bottlebrush squirreltail, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles  
*Depth:* 0 to 4 inches  
*Texture:* Very gravelly loam  
*Structure:* Platy  
*Consistence:* Slightly hard, very friable  
*Reaction:* Moderately alkaline  
*Depth:* 4 to 10 inches  
*Texture:* Very gravelly loam, extremely gravelly loam  
*Structure:* Massive
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline

Depth: 10 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 7 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.7 to 2.0 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—B
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Lithic Xerolic Haplorgids, loamy-skeletal, mixed, mesic
Positions on landscape: Slightly convex, north-facing side slopes of mountains
Distinctive present vegetation: Singleleaf pinyon, black sagebrush, bluegrass

Inclusion 2
Classification: Xeric Lithic Haplorgids, fine, montmorillonitic, mesic
Positions on landscape: Toe slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Lithic Torriorthents, clayey-skeletal, montmorillonitic (calcareous), mesic
Positions on landscape: Eroded, lower side slopes of mountains
Distinctive present vegetation: Spiny hopsage, black sagebrush

Inclusion 4
Positions on landscape: Scattered peaks
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Hooplite Soil
Wild herbaceous plants (nonirrigated): Poor

 Shrubs (nonirrigated): Poor

Jung Soil
Wild herbaceous plants (nonirrigated): Fair

 Shrubs (nonirrigated): Fair

Izod Soil
Wild herbaceous plants (nonirrigated): Poor

 Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Hooplite Soil
Range seeding: Poor—droughty, small stones, depth to rock
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Jung Soil
Range seeding: Poor—small stones, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, too clayey
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Izod Soil
Range seeding: Poor—droughty, large stones, depth to rock
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Hooplite, Jung, and Izod soils—Vlls, nonirrigated
Range site: Hooplite, Jung, and Izod soils—024X030N; Inclusion 1—025X063N; Inclusion 2—024X005N; Inclusion 3—025X025N; Inclusion 4—none
3951—Hooplito-Old Camp-Puett association

*Positions on landscape:* Foothills

**Composition**

*Major components:*
- Hooplito very gravelly fine sandy loam, 15 to 50 percent slopes, extremely stony—45 percent
- Old Camp very gravelly loam, 15 to 30 percent slopes—25 percent
- Puett fine sandy loam, 30 to 50 percent slopes—20 percent

*Contrasting inclusions:*
- Jung very gravelly loam, 8 to 15 percent slopes—5 percent
- Xerollic Hapluderts, fine-loamy, mixed, mesic, 4 to 8 percent slopes—3 percent
- Puett gravelly loam, 4 to 15 percent slopes—2 percent

**Characteristics of the Hooplito Soil**

*Classification:* Lithic Xerollic Hapluderts, loamy-skeletal, mixed, mesic
*Positions on landscape:* Convex crests and shoulder slopes of foothills
*Parent material:* Residuum derived from rhyolitic rock
*Slope:* 15 to 50 percent
*Elevation:* 6,300 to 6,700 feet
*Average annual precipitation:* About 8 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Bottlebrush squirreltail, black sagebrush

**Typical Profile**

*Rock fragments on surface:* 20 percent stones and boulders, 10 percent cobbles, 45 percent pebbles

*Depth:* 0 to 4 inches
*Texture:* Very gravelly fine sandy loam
*Structure:* Platy
*Consistence:* Slightly hard, firm
*Reaction:* Mildly alkaline

*Depth:* 4 to 8 inches
*Texture:* Very gravelly loam, very gravelly clay loam
*Structure:* Subangular blocky
*Consistence:* Slightly hard, friable
*Reaction:* Moderately alkaline

*Depth:* 8 inches
*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 6 to 14 inches
*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None

*Permeability:* Moderate
*Available water capacity:* 0.5 to 1.5 inches
*Water-supplying capacity:* 8 inches
*Runoff:* Rapid
*Hydrologic group:* D
*Erosion factors (upper layer):* K value—0.10; T value—1; wind erodibility group—5
*Hazard of erosion:* By water—moderate; by wind—slight
*Shrink-swell potential:* Low
*Corrosivity:* To steel—high; to concrete—low
*Potential for frost action:* Moderate

**Characteristics of the Old Camp Soil**

*Classification:* Lithic Xerollic Hapluderts, loamy-skeletal, mixed, mesic
*Positions on landscape:* Concave, lower side slopes of foothills
*Parent material:* Residuum that is derived from basalt and andesite and includes volcanic ash
*Slope:* 15 to 30 percent
*Elevation:* 6,300 to 6,700 feet
*Average annual precipitation:* About 9 inches
*Average annual air temperature:* About 49 degrees F
*Frost-free season:* About 110 days
*Dominant present vegetation:* Bluegrass, Thurber needlegrass, Wyoming big sagebrush

**Typical Profile**

*Rock fragments on surface:* 30 percent cobbles, 20 percent pebbles

*Depth:* 0 to 2 inches
*Texture:* Very gravelly loam
*Structure:* Platy
*Consistence:* Slightly hard, very friable
*Reaction:* Mildly alkaline

*Depth:* 2 to 14 inches
*Texture:* Very gravelly loam, very cobbly clay loam
*Structure:* Angular blocky
*Consistence:* Slightly hard, friable
*Reaction:* Mildly alkaline

*Depth:* 14 inches
*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 10 to 20 inches
*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderately slow
*Available water capacity:* 0.9 to 2.0 inches
*Water-supplying capacity:* 9 inches
*Runoff:* Medium
*Hydrologic group:* D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—B

Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Puett Soil**

*Classification*: Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape*: Eroded scarps and side slopes of foothills

*Parent material*: Residuum derived from tuff and sandstone

*Slope*: 30 to 50 percent

*Elevation*: 6,300 to 6,700 feet

*Average annual precipitation*: About 9 inches

*Average annual air temperature*: About 48 degrees F

*Frost-free season*: About 110 days

*Dominant present vegetation*: Bluegrass, Wyoming big sagebrush, Indian ricegrass, black sagebrush

**Typical Profile**

*Rock fragments on surface*: 5 percent pebbles

*Depth*: 0 to 3 inches

*Texture*: Fine sandy loam

*Structure*: Platy

*Consistence*: Soft, very friable

*Reaction*: Moderately alkaline

*Depth*: 3 to 13 inches

*Texture*: Coarse sandy loam, sandy loam

*Structure*: Massive

*Consistence*: Soft, friable

*Reaction*: Moderately alkaline

*Depth*: 13 inches

*Kind of material*: Weathered bedrock

**Soil and Water Features**

*Depth to bedrock*: 10 to 20 inches

*Depth to a seasonal high water table*: More than 60 inches

*Frequency of flooding*: None

*Permeability*: Moderately rapid

*Available water capacity*: 1.3 to 3.0 inches

*Water-supplying capacity*: 7 inches

*Runoff*: Rapid

*Hydrologic group*: D

*Erosion factors (upper layer)*: K value—0.28; T value—1; wind erodibility group—3

*Hazard of erosion*: By water—severe; by wind—slight

*Shrink-swell potential*: Low

*Corrosivity*: To steel—high; to concrete—low

*Potential for frost action*: Moderate

**Contrasting Inclusions**

**Inclusion 1**

*Classification*: Lithic Xerollic Haplalgids, clayey-skeletal, montmorillonitic, mesic

*Positions on landscape*: Crests of foothills

*Distinctive present vegetation*: Black sagebrush, bluegrass

**Inclusion 2**

*Classification*: Xeric Haplalgids, fine-loamy, mixed, mesic

*Positions on landscape*: Fan piedmont remnants and toe slopes of foothills

*Distinctive present vegetation*: Wyoming big sagebrush

**Inclusion 3**

*Classification*: Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

*Positions on landscape*: Eroded, lowest crests of foothills

*Distinctive present vegetation*: Wyoming big sagebrush, black sagebrush, rabbitbrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Hooplrite Soil**

*Wild herbaceous plants (nonirrigated)*: Poor

*Shrubs (nonirrigated)*: Poor

**Old Camp Soil**

*Wild herbaceous plants (nonirrigated)*: Fair

*Shrubs (nonirrigated)*: Fair

**Puett Soil**

*Wild herbaceous plants (nonirrigated)*: Poor

*Shrubs (nonirrigated)*: Poor

**Suitability and Limitations for Selected Uses**

**Hooplrite Soil**

*Range seeding*: Poor—droughty, small stones, depth to rock

*Roadfill*: Poor—depth to rock, slope

*Topsoil*: Poor—depth to rock, small stones, slope

*Daily cover for landfills*: Poor—depth to rock, slope

*Shallow excavations*: Severe—depth to rock, slope

*Local roads and streets*: Severe—depth to rock, slope

*Pond reservoir areas*: Severe—depth to rock, slope

*Embankments, dikes, and levees*: Severe—thin layer

*Sand*: Improbable source—excess fines

*Gravel*: Improbable source—excess fines

**Old Camp Soil**

*Range seeding*: Poor—small stones, droughty

*Roadfill*: Poor—depth to rock

*Topsoil*: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Puett Soil
Range seeding: Poor—droughty, erodes easily
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—seepage, piping
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Hooplite and Old Camp soils—VIIa, nonirrigated; Puett soil—VIIe, nonirrigated
Range site: Hooplite soil—027X032N; Old Camp soil—024X005N; Puett soil—025X025N; Inclusion 1—027X032N; Inclusion 2—027X008N; Inclusion 3—025X025N

3952—Hooplite-Stingdorn association
Positions on landscape: Foothills

Composition
Major components:
Hooplite very gravelly fine sandy loam, 4 to 15 percent slopes—55 percent
Stingdorn gravelly loam, 2 to 8 percent slopes—30 percent
Contrasting inclusions:
Typic Haplorgids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—7 percent
Rock outcrop—9 percent
Lithic Camborthids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—3 percent
Rubble land—2 percent

Characteristics of the Hooplite Soil
Classification: Lithic Xerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Side slopes of foothills
Parent material: Residuum derived from rhyolite rock
Slope: 4 to 15 percent

Elevation: 5,900 to 6,600 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, black sagebrush

Typical Profile
Rock fragments on surface: 10 percent cobbles, 45 percent pebbles
Depth: 0 to 4 inches
Texture: Very gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, firm
Reaction: Mildly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 4 to 8 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 8 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to bedrock: 6 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.5 to 1.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Stingdorn Soil
Classification: Typic Durargids, loamy-skeletal, mixed, mesic, shallow
Positions on landscape: Crests of foothills
Parent material: Residuum derived from rhyolite, tuff, and andesite
Slope: 2 to 8 percent
Elevation: 5,900 to 6,600 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Typical Profile
Rock fragments on surface: 30 percent pebbles
Depth: 0 to 7 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 7 to 15 inches
Texture: Very cobbly clay loam
Structure: Angular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 5 to 15
Depth: 15 to 20 inches
Kind of material: Indurated hardpan
Depth: 20 inches
Kind of material: Unweathered bedrock

Soil and Water Features
Depth to the hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 to 2.2 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.17; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions
Inclusion 3
Classification: Lithic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Slightly convex, upper, north-facing side slopes of foothills
Distinctive present vegetation: Indian ricegrass, needleandthread, black sagebrush

Inclusion 4
Positions on landscape: Rock stripes below areas of Rock outcrop
Distinctive present vegetation: None

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements
Hooplite Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Stingdorn Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses
Hooplite Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Stingdorn Soil
Range seeding: Poor—droughty, too arid
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, cemented pan, large stones
Daily cover for landfill: Poor—depth to rock, large stones
Shallow excavations: Severe—depth to rock, cemented pan
Local roads and streets: Severe—depth to rock
Pond reservoir areas: Severe—depth to rock, cemented pan
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Hooplite and Stingdorn soils—VII, nonirrigated
Range site: Hooplite soil—02B016N; Stingdorn soil—
024X002N; Inclusion 1—024X002N; Inclusion 2—none; Inclusion 3—028B011N; Inclusion 4—none

3960—Pineval gravelly loam, 2 to 4 percent slopes

Positions on landscape: Fan piedmonts

**Composition**

Major component:
Pineval gravelly loam, 2 to 4 percent slopes—85 percent

Contrasting inclusions:
Xerolic Natargids, fine-loamy, mixed, mesic, 0 to 4 percent slopes—8 percent
Typic Haplorgids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—5 percent
Xerolic Camborthids, loamy-skeletal, mixed, mesic, occasionally flooded, 0 to 4 percent slopes—2 percent

**Characteristics of the Pineval Soil**

Classification: Durixerolic Haplorgids, loamy-skeletal, mixed, mesic

Positions on landscape: Fan piedmonts
Parent material: Mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,900 to 6,600 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

**Typical Profile**

Rock fragments on surface: 10 percent cobbles, 60 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand

**Structure**: Single grain
**Consistency**: Loose
**Reaction**: Moderately alkaline
**Salinity**: 0 to 2 millimhos per centimeter
**Sodicity (SAR)**: 0 to 2

**Soil and Water Features**

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.2 to 4.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5;
wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Contrasting Inclusions**

Inclusion 1
Classification: Xerolic Natargids, fine-loamy, mixed, mesic
Positions on landscape: The lower margins of fan piedmonts
Distinctive present vegetation: Wyoming big sagebrush, black greasewood

Inclusion 2
Classification: Typic Haplorgids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Classification: Xerolic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Black greasewood, basin big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Land cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups

Land capability classification: Pineal soil—I Ve, irrigated; Vls, nonirrigated
Range site: Pineal soil—028B010N; Inclusion 1—024X022N; Inclusion 2—024X002N; Inclusion 3—024X022N

3961—Pineal-Orovada-Beoska association

Positions on landscape: Fan piedmonts

Composition

Major components:
Pineal very cobby loam, 2 to 8 percent slopes—35 percent
Orovada cobby fine sandy loam, 2 to 8 percent slopes—30 percent
Beoska very fine sandy loam, 2 to 8 percent slopes—25 percent

Contrasting inclusions:
Typic Camborthids, loamy-skeletal, mixed, mesic, 15 to 30 percent slopes—4 percent
Xerollic Haplargids, fine-loamy, mixed, mesic, 15 to 30 percent slopes—4 percent
Settlements fine sandy loam, drained, 0 to 4 percent slopes—2 percent

Characteristics of the Pineal Soil

Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: The upper part of fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,200 to 5,900 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 30 percent cobbles, 10 percent pebbles
Depth: 0 to 5 inches
Texture: Very cobby loam

Structure: Platy
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.2 to 4.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium

Hydrologic group: B
Erosion factors (upper layer): K value—0.15; T value—5; wind erosion group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Orovada Soil

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,200 to 5,900 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

Rock fragments on surface: 15 percent cobbles, 10 percent pebbles
Depth: 0 to 8 inches  
Texture: Cobbly fine sandy loam  
Structure: Subangular blocky  
Consistency: Slightly hard, very friable  
Reaction: Neutral  
Salinity: 0 to 2 millimhos per centimeter  
Sodicity (SAR): 0 to 2

Depth: 8 to 26 inches  
Texture: Fine sandy loam, loam  
Structure: Subangular blocky  
Consistency: Slightly hard, very friable  
Reaction: Mildly alkaline  
Salinity: 0 to 2 millimhos per centimeter  
Sodicity (SAR): 0 to 2

Depth: 26 to 60 inches  
Texture: Stratified fine sandy loam to silt loam  
Structure: Massive  
Consistency: Slightly hard, friable  
Reaction: Moderately alkaline  
Salinity: 4 to 8 millimhos per centimeter  
Sodicity (SAR): 0 to 5

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Moderate  
Available water capacity: 9 to 11 inches  
Water-supplying capacity: 8 inches  
Runoff: Medium  
Hydrologic group: B  
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—4  
Hazard of erosion: By water—slight; by wind—severe  
Shrink-swell potential: Low  
Corrosivity: To steel—high; to concrete—low  
Potential for frost action: Moderate

Characteristics of the Besoska Soil

Classification: Duric Natrargids, fine-loamy, mixed, mesic  
Positions on landscape: The lower part of fan piedmont remnants  
Parent material: Loess over loamy and gravelly mixed alluvium  
Slope: 2 to 8 percent  
Elevation: 5,200 to 5,900 feet  
Average annual precipitation: About 8 inches  
Average annual air temperature: About 49 degrees F  
Frost-free season: About 110 days  
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile

Depth: 0 to 13 inches  
Texture: Very fine sandy loam  
Structure: Platy  
Consistency: Slightly hard, very friable  
Reaction: Moderately alkaline  
Salinity: 2 to 4 millimhos per centimeter  
Sodicity (SAR): 0 to 5

Depth: 13 to 24 inches  
Texture: Silty clay loam, silt loam  
Structure: Prismatic  
Consistency: Hard, very friable  
Reaction: Strongly alkaline  
Salinity: 8 to 16 millimhos per centimeter  
Sodicity (SAR): 25 to 46

Depth: 24 to 55 inches  
Texture: Gravelly very fine sandy loam  
Structure: Massive  
Consistency: Soft, very friable  
Reaction: Strongly alkaline  
Salinity: 16 to 30 millimhos per centimeter  
Sodicity (SAR): 46 to 60

Depth: 55 to 60 inches  
Texture: Very gravelly fine sandy loam  
Structure: Massive  
Consistency: Soft, very friable  
Reaction: Strongly alkaline  
Salinity: 16 to 30 millimhos per centimeter  
Sodicity (SAR): 46 to 60

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches  
Frequency of flooding: None  
Permeability: Moderately slow  
Available water capacity: 7.8 to 9.7 inches  
Water-supplying capacity: 7 inches  
Runoff: Medium  
Hydrologic group: B  
Erosion factors (upper layer): K value—0.49; T value—5; wind erodibility group—3  
Hazard of erosion: By water—slight; by wind—severe  
Shrink-swell potential: Moderate  
Corrosivity: To steel—high; to concrete—high  
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1  
Classification: Typic Camborthids, loamy-skeletal, mixed, mesic  
Positions on landscape: South-facing side slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, Wyoming big sagebrush

Inclusion 2
Classification: Xerollic Haplargids, fine-loamy, mixed, mesic
Positions on landscape: North-facing side slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, pine bluegrass

Inclusion 3
Classification: Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic
Positions on landscape: Inset fans dissecting fan piedmont remnants near the front of mountains
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Pineval Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Beoska Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Suitability and Limitations for Selected Uses

Pineval Soil
Range seeding: Poor—large stones
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embarkments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Orovada Soil
Range seeding: Fair—too arid, large stones
Roadfill: Good
Topsoil: Poor—small stones
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope

Embarkments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Beoska Soil
Range seeding: Poor—too arid, excess salt, excess sodium
Roadfill: Good
Topsoil: Poor—small stones, excess salt, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embarkments, dikes, and levees: Severe—excess salt, excess sodium
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Pineval and Orovida soils—Vils, nonirrigated; Beoska soil—Illie, irrigated, and Vils, nonirrigated
Range site: Pineval soil—028B010N; Orovida soil—024X005N; Beoska soil—024X002N; Inclusion 1—024X026N; Inclusion 2—024X005N; Inclusion 3—025X003N

3964—Pineval-Orovada association
Positions on landscape: Fan piedmonts

Composition
Major components:
Pineval gravelly fine sandy loam, 2 to 8 percent slopes—65 percent
Orovada fine sandy loam, 2 to 4 percent slopes—20 percent
Contrasting inclusions:
Xerollic Camborthids, loamy-skeletal, mixed, mesic, 0 to 4 percent slopes—8 percent
Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—5 percent
Aquic Duric Haploxereolls, coarse-loamy, mixed, mesic, 0 to 2 percent slopes—2 percent

Characteristics of the Pineval Soil
Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 10 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly fine sandy loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.0 to 4.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.24; T value—5;
wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Orovida Soil

Classification: Durixerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,700 to 6,000 feet

Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistence: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 20 to 65 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Xerollic Camborthids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan drainageways
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Classification: Xerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fan aprons
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Classification: Aquic Duric Haploxerolls, coarse-loamy, mixed, mesic
Positions on landscape: Adjacent to active channels on inset fans
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Pineval Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Pineval Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Orovada Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Pineval soil—IVe, irrigated, and Vls, nonirrigated; Orovada soil—Ile, irrigated, and Vlc, nonirrigated
Range site: Pineval and Orovada soils—028B010N; Inclusions 1 and 2—028B010N; Inclusion 3—028B003N

3990—Settlemeyer fine sandy loam, drained, 0 to 2 percent slopes

Positions on landscape: Flood plains

Composition

Major component:
Settlemeyer fine sandy loam, drained, 0 to 2 percent slopes—85 percent
Contrasting inclusions:
Xeric Torriorthents, fine-loamy, mixed, mesic, 0 to 4 percent slopes—7 percent
Xerollic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—7 percent
Settlemeyer fine sandy loam, frequently flooded, 0 to 2 percent slopes—1 percent

Characteristics of the Settlemeyer Soil
Classification: Fluvauquential Haplaquolls, fine-loamy, mixed, mesic
Positions on landscape: Flood plains
Parent material: Mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,100 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Basin wildrye, basin big sagebrush

Typical Profile
Depth: 0 to 16 inches
Texture: Fine sandy loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Depth: 16 to 36 inches
Texture: Silty clay loam, clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Depth: 36 to 60 inches
Texture: Stratified very gravelly loamy sand to silty clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Mildly alkaline

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 9 to 11 inches
Water-supplying capacity: 10 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5;
wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Contrasting Inclusions**

**Inclusion 1**
Classification: Xeric Torriorthents, fine-loamy, mixed, mesic
Positions on landscape: Adjacent to stream channel banks
Distinctive present vegetation: Basin big sagebrush, Wyoming big sagebrush, black greasewood

**Inclusion 2**
Classification: Xerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Fanlettes extending from adjacent fan piedmonts
Distinctive present vegetation: Wyoming big sagebrush

**Inclusion 3**
Classification: Fluvaquentic Haplauquolls, fine-loamy, mixed, mesic
Positions on landscape: Concave to smooth, long and narrow flood plains
Distinctive present vegetation: Sedge, rush, bluegrass

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**
Range seeding: Good
Roadfill: Good
Topsoil: Fair—too clayey, small stones, area reclaim
Daily cover for landfill: Fair—too clayey, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**
Land capability classification: Settlemeyer soil—I1lc, irrigated, and V1c, nonirrigated

Range site: Settlemeyer soil—028B003N; Inclusion 1—024X006N; Inclusion 2—024X005N; Inclusion 3—025X001N

**3991—Settlemeyer-Pineal association**

**Positions on landscape:** Inset fans, fan skirts

**Composition**

Major components:
Settlemeyer loam, drained, 2 to 4 percent slopes—70 percent
Pineval gravelly loam, 2 to 8 percent slopes—15 percent

Contrasting inclusions:
Xerolic Camborthids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—8 percent
Xerolic Camborthids, coarse-loamy, mixed, mesic, 2 to 8 percent slopes—5 percent
Typic Camborthids, fine-silty, mixed, mesic, 2 to 8 percent slopes—2 percent

**Characteristics of the Settlemeyer Soil**
Classification: Fluvaquentic Haplauquolls, fine-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,400 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Basin wildrye, basin big sagebrush

**Typical Profile**
Depth: 0 to 16 inches
Texture: Loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Mildly alkaline

Depth: 16 to 36 inches
Texture: Silty clay loam, clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline

Depth: 36 to 60 inches
Texture: Stratified very gravelly loamy sand to silty clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Mildly alkaline

Soil Survey
Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 9 to 11 inches
Water-supplying capacity: 11 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.37; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Pineal Soil

Classification: Durixerollic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Fan skirts adjacent to inset fans
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,400 to 6,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days
Dominant present vegetation: Indian ricegrass, bluegrass, needlegrass, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 40 percent pebbles
Depth: 0 to 5 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 5 to 11 inches
Texture: Very gravelly loam, very gravelly clay loam
Structure: Subangular blocky
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 11 to 60 inches
Texture: Extremely gravelly sandy loam, extremely gravelly loamy sand
Structure: Single grain
Consistence: Loose
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features

Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 3.2 to 4.4 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Xerollic Camborthids, fine-loamy, mixed, mesic
Positions on landscape: Inset fan remnants
Distinctive present vegetation: Black greasewood, basin big sagebrush

Inclusion 2
Classification: Xerollic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Gullied parts of inset fan remnants
Distinctive present vegetation: Spiny hopsage, Wyoming big sagebrush

Inclusion 3
Classification: Typic Camborthids, fine-silty, mixed, mesic
Positions on landscape: The lower parts of inset fan remnants
Distinctive present vegetation: Black greasewood, rubber rabbitbrush, inland saltgrass

Major Current Uses

Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Settlemeyer Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Pineal Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Settlemeyer Soil
Range seeding: Good
Roadfill: Good
Topsoil: Fair—too clayey, area reclam
Daily cover for landfill: Fair—too clayey, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Pineal Soil
Range seeding: Fair—too arid
Roadfill: Good
Topsoil: Poor—small stones, area reclam
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, flooding
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Sand: Probable source
Gravel: Probable source

Interpretive Groups
Land capability classification: Settlemyer soil—I1c, irrigated, and Vic, nonirrigated; Pineval soil—IVe, irrigated, and ViS, nonirrigated
Range site: Settlemyer soil—028B003N; Pineval soil—028B010N; Inclusion 1—024X022N; Inclusion 2—028B052N; Inclusion 3—028B004N

3992—Settlemyer complex
Positions on landscape: Intermountain drainageways

Composition

Major components:
Settlemyer loam, drained, 2 to 4 percent slopes—65 percent
Settlemyer loam, frequently flooded, 0 to 2 percent slopes—20 percent
Contrasting inclusions:
Xerollic Hapludands, loamy-skeletal, mixed, mesic, 2 to 8 percent slopes—9 percent
Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic, 0 to 4 percent slopes—6 percent

Characteristics of the Settlemyer Soil, Drained
Classification: Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic
Positions on landscape: Concave, entrenched inset fans and flood plains of intermountain drainageways
Parent material: Mixed alluvium
Slope: 2 to 4 percent
Elevation: 5,200 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Thurber needlegrass, bluebunch wheatgrass, Wyoming big sagebrush

Typical Profile
Depth: 0 to 16 inches
Texture: Loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 16 to 40 inches
Texture: Silty clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 40 to 60 inches
Texture: Fine sandy loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Soil and Water Features
Depth to a seasonal high water table: 36 to 48 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 9.4 to 11.0 inches
Water-supplying capacity: 10 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (upper layer): K value—0.37; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: High

Characteristics of the Settlemyer Soil, Frequently Flooded
Classification: Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic
Positions on landscape: Undissected parts of flood plains
Parent material: Mixed alluvium
Slope: 0 to 2 percent
Elevation: 5,200 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days
Dominant present vegetation: Basin wildrye, western wheatgrass, basin big sagebrush

**Typical Profile**

Depth: 0 to 15 inches
Texture: Loam
Structure: Platy
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 15 to 35 inches
Texture: Silty clay loam, clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 10
Depth: 35 to 60 inches
Texture: Stratified very gravelly loamy sand to silty clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Mildly alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 10

**Soil and Water Features**

Depth to a seasonal high water table: 12 to 36 inches
Frequency of flooding: Frequent for brief periods in December through March
Permeability: Moderately slow
Available water capacity: 8 to 10 inches
Water-supplying capacity: 12 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: High

**Contrasting Inclusions**

Inclusion 1
Classification: Xerolic Haplargids, loamy-skeletal, mixed, mesic
Positions on landscape: Fanettes extending from the front of adjacent mountains, along the outer margin of drainageways
Distinctive present vegetation: Wyoming big sagebrush, bluegrass

Inclusion 2
Classification: Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Positions on landscape: Adjacent to stream channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

**Major Current Uses**

Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**

**Settlemeyer Soil, Drained**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Settlemeyer Soil, Frequently Flooded**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

**Suitability and Limitations for Selected Uses**

**Settlemeyer Soil, Drained**
Range seeding: Good
Roadfill: Poor—low strength
Topsoil: Fair—small stones
Daily cover for landfills: Fair—too clayey, wetness
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Moderate—wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Settlemeyer Soil, Frequently Flooded**
Range seeding: Fair—excess salt
Roadfill: Fair—wetness
Topsoil: Fair—too clayey, small stones, area reclaim
Daily cover for landfills: Poor—wetness
Shallow excavations: Severe—cutbanks cave, wetness
Local roads and streets: Severe—low strength, flooding, frost action
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**

Land capability classification: Settlemeyer soil, drained—IIw, irrigated, and Vlw, nonirrigated; Settlemeyer soil, frequently flooded—Illw, irrigated, and Vw, nonirrigated
Range site: Settlemeyer soil, drained—025X003N; Settlemeyer soil, frequently flooded—025X001N; Inclusion 1—024X005N; Inclusion 2—024X006N
4041—Hymas-Xine-Attella association

Positions on landscape: Mountains

**Composition**

Major components:
- Hymas gravelly loam, 30 to 50 percent slopes—35 percent
- Xine gravelly loam, 30 to 50 percent slopes—30 percent
- Attella very gravelly loam, 30 to 50 percent slopes—20 percent

Contrasting inclusions:
- Aridic Calcixerolls, loamy-skeletal, carbonatic, frigid, 30 to 50 percent slopes—7 percent
- Aridic Calcixerolls, loamy-skeletal, carbonatic, frigid, 15 to 50 percent slopes—3 percent
- Rock outcrop—3 percent
- Welch clay loam, drained, 0 to 4 percent slopes—2 percent

**Characteristics of the Hymas Soil**

Classification: Lithic Haploxerolls, loamy-skeletal, carbonatic, frigid

Positions on landscape: Convex, east- and west-facing side slopes of mountains

Parent material: Residuum and colluvium derived from limestone

Slope: 30 to 50 percent

Elevation: 6,300 to 7,800 feet

Average annual precipitation: About 14 inches

Average annual air temperature: About 45 degrees F

Frost-free season: About 80 days

Dominant present vegetation: Singleleaf pinyon, bluebunch wheatgrass, mountain big sagebrush, Utah juniper

Site index for common trees: Singleleaf pinyon—40; Utah juniper—40

**Typical Profile**

Rock fragments on surface: 5 percent cobbles, 20 percent pebbles

Depth: 0 to 9 inches

Texture: Gravelly loam

Structure: Granular

Consistence: Soft, friable

Reaction: Moderately alkaline

Depth: 9 to 15 inches

Texture: Very cobbly loam

Structure: Massive

Consistence: Slightly hard, friable

Reaction: Moderately alkaline

Depth: 15 inches

Kind of material: Unweathered bedrock

**Soil and Water Features**

Depth to bedrock: 10 to 20 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderate

Available water capacity: 1.0 to 2.8 inches

Water-supplying capacity: 11 inches

Runoff: Rapid

Hydrologic group: D

Erosion factors (upper layer): K value—0.28; T value—1; wind erodibility group—6

Hazard of erosion: By water—severe; by wind—slight

Shrink-swell potential: Low

Corrosivity: To steel—moderate; to concrete—low

Potential for frost action: Moderate

**Characteristics of the Xine Soil**

Classification: Aridic Calcixerolls, loamy-skeletal, mixed, frigid

Positions on landscape: Concave, north-facing side slopes of mountains

Parent material: Residuum derived from limestone

Slope: 30 to 50 percent

Elevation: 6,300 to 7,800 feet

Average annual precipitation: About 14 inches

Average annual air temperature: About 44 degrees F

Frost-free season: About 80 days

Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, bluegrass, snowberry

**Typical Profile**

Rock fragments on surface: 15 percent pebbles

Depth: 0 to 10 inches

Texture: Gravelly loam

Structure: Granular

Consistence: Soft, very friable

Reaction: Mildly alkaline

Depth: 10 to 33 inches

Texture: Very cobbly loam, very cobbly sandy loam

Structure: Massive

Consistence: Soft, very friable

Reaction: Moderately alkaline

Depth: 33 inches

Kind of material: Weathered bedrock

**Soil and Water Features**

Depth to bedrock: 20 to 40 inches

Depth to a seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderately rapid

Available water capacity: 2 to 4 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (upper layer): K value—0.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Characteristics of the Attella Soil**

*Classification:* Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcaceous), frigid
*Positions on landscape:* Slightly rolled, south-facing side slopes and crests of mountains
*Parent material:* Residuum derived from dolostone
*Slope:* 30 to 50 percent
*Elevation:* 6,300 to 7,800 feet
*Average annual precipitation:* About 12 inches
*Average annual air temperature:* About 42 degrees F
*Frost-free season:* About 90 days
*Dominant present vegetation:* Singleleaf pinyon, mountain big sagebrush, bluegrass
*Site index for common trees:* Singleleaf pinyon—40; Utah juniper—40

**Typical Profile**

*Rock fragments on surface:* 5 percent flagstones, 80 percent pebbles
*Depth:* 0 to 3 inches
*Texture:* Very gravelly loam
*Structure:* Platy
*Consistency:* Soft, very friable
*Reaction:* Moderately alkaline
*Depth:* 3 to 7 inches
*Texture:* Very gravelly loam
*Structure:* Subangular blocky
*Consistency:* Slightly hard, very friable
*Reaction:* Moderately alkaline
*Depth:* 7 inches
*Kind of material:* Unweathered bedrock

**Soil and Water Features**

*Depth to bedrock:* 6 to 10 inches
*Depth to a seasonal high water table:* More than 60 inches
*Frequency of flooding:* None
*Permeability:* Moderate
*Available water capacity:* 0.7 to 1.5 inches
*Water-supplying capacity:* 9 inches
*Runoff:* Rapid
*Hydrologic group:* D
*Erosion factors (upper layer):* K value—0.15; T value—1; wind erodibility group—7

Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

**Contrasting Inclusions**

**Inclusion 1**
*Classification:* Aridic Calciixerolls, loamy-skeletal, carbonatic, frigid
*Positions on landscape:* The lower, south-facing side slopes of mountains
*Distinctive present vegetation:* Bluebunch wheatgrass, mountain big sagebrush

**Inclusion 2**
*Classification:* Aridic Calciixerolls, loamy-skeletal, carbonatic, frigid
*Positions on landscape:* Convex, rounded, highest, east- and west-facing side slopes of mountains
*Distinctive present vegetation:* Black sagebrush, bluebunch wheatgrass

**Inclusion 3**
*Positions on landscape:* Scattered peaks and bedding planes
*Distinctive present vegetation:* None

**Inclusion 4**
*Classification:* Cumulic Haplaquolls, fine-loamy, mixed, frigid
*Positions on landscape:* Intermountain drainageways
*Distinctive present vegetation:* Basin wildrye, basin big sagebrush

**Major Uses**

Current uses: Livestock grazing, wildlife habitat
Potential foreseeable use: Cordwood production

**Suitability for Wildlife Habitat Elements**

**Hymas Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Coniferous plants (nonirrigated):* Poor
*Shrubs (nonirrigated):* Fair

**Xine Soil**
*Wild herbaceous plants (nonirrigated):* Fair
*Shrubs (nonirrigated):* Fair

**Attella Soil**
*Wild herbaceous plants (nonirrigated):* Poor
*Coniferous plants (nonirrigated):* Poor
*Shrubs (nonirradiated):* Poor

**Suitability and Limitations for Selected Uses**

**Hymas Soil**
*Range seeding:* Poor—erodes easily, droughty
*Roadfill:* Poor—depth to rock, slope
*Topsoil:* Poor—depth to rock, large stones, slope
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones

Xine Soil
Range seeding: Poor—erodes easily
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—small stones, slope
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Atella Soil
Range seeding: Poor—droughty, depth to rock, small stones
Roadfill: Poor—depth to rock, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups

Land capability classification: Hymas and Xine soils—VIIe, nonirrigated; Atella soil—VIIIs, nonirrigated
Range site: Hymas and Atella soils—025X062N; Xine soil—024X021N; Inclusion 1—024X029N; Inclusion 2—024X031N; Inclusion 3—none; Inclusion 4—028B024N

4070—Genaw-Wieland-Grina association

Positions on landscape: Hills, fan piedmonts

Composition

Major components:
Genaw gravelly loam, 15 to 30 percent slopes—35 percent
Wieland gravelly loam, 4 to 15 percent slopes—30 percent
Grina very gravelly loam, eroded, 15 to 30 percent slopes—20 percent

Contrasting inclusions:
Durixerolic Camborthids, fine-loamy, mixed, mesic, 2 to 8 percent slopes—8 percent
Typic Natargids, fine, montmorillonitic, mesic, 8 to 15 percent slopes—4 percent
Durixerolic Camborthids, fine-loamy, mixed, mesic, 2 to 4 percent slopes—3 percent

Characteristics of the Genaw Soil

Classification: Xerolic Haplargids, loamy, mixed, mesic, shallow
Positions on landscape: Convex side slopes of hills
Parent material: Loess mantle over residuum derived from tuffaceous sediment
Slope: 15 to 30 percent
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, Wyoming big sagebrush

Typical Profile

Rock fragments on surface: 25 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 6 to 11 inches
Texture: Gravelly loam, gravelly clay loam
Structure: Angular blocky
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 11 to 16 inches
Texture: Very gravelly loam
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 16 inches
Kind of material: Weathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.9 to 3.0 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Wieland Soil
Classification: Durixerolic Hapludands, fine, montmorillonitic, mesic
Positions on landscape: Summits of fan piedmont remnants over low hills
Parent material: Mixed alluvium that includes loess and fluvial deposits
Slope: 4 to 15 percent
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, needlegrass, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 20 percent pebbles
Depth: 0 to 8 inches
Texture: Gravelly loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 8 to 20 inches
Texture: Gravelly clay
Structure: Prismatic
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Depth: 20 to 60 inches
Texture: Gravelly loam, gravelly sandy loam
Structure: Massive
Consistency: Hard, firm
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter

Soil and Water Features
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6 to 9 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (upper layer): K value—0.32; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Grina Soil
Classification: Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow
Positions on landscape: Eroded hills along the edge of fan piedmont remnants
Parent material: Residual deposits from sedimentary rock
Slope: 15 to 30 percent
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Wyoming big sagebrush, Utah juniper, black sagebrush
Site index for Utah juniper: 18

Typical Profile
Rock fragments on surface: 55 percent pebbles
Depth: 0 to 3 inches
Texture: Very gravelly loam
Structure: Platy
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 3 to 14 inches
Texture: Silt loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 14 inches
Kind of material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.7 to 2.8 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.15; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Classification: Durixerolic Camborthids, fine-loamy, mixed, mesic
Positions on landscape: Inset fans
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 2
Classification: Typic Natrargids, fine, montmorillonitic, mesic
Positions on landscape: Concave side slopes of hills
Distinctive present vegetation: Small rabbitbrush, shadscale, Wyoming big sagebrush

Inclusion 3
Classification: Durixerolic Camborthids, fine-loamy, mixed, mesic
Positions on landscape: The lower inset fans
Distinctive present vegetation: Basin big sagebrush, black greasewood, basin wildrye

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Genaw Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Wieland Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Grina Soil
Wild herbaceous plants (nonirrigated): Fair
Coniferous plants (nonirrigated): Poor
Shrubs (nonirrigated): Fair

Suitability and Limitations for Selected Uses

Genaw Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Wieland Soil
Range seeding: Poor—rooting depth
Roadfill: Good
Topsoil: Poor—small stones, area reclaim
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Grina Soil
Range seeding: Poor—droughty, small stones
Roadfill: Poor—depth to rock, low strength, slope
Topsoil: Poor—depth to rock, small stones, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—low strength, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Genaw soil—VIIe, nonirrigated; Wieland soil—VIs, nonirrigated; Grina soil—VIIIs, nonirrigated
Range site: Genaw and Wieland soils—024X005N; Grina soil—025X059N; Inclusion 1—025X003N; Inclusion 2—024X045N; Inclusion 3—024X006N

4072—Genaw-Orovada-Puett association
Positions on landscape: Rolling hills

Composition
Major components:
Genaw very fine sandy loam, 4 to 15 percent slopes—40 percent
Orovada fine sandy loam, 2 to 8 percent slopes—30 percent
Puett fine sandy loam, 15 to 30 percent slopes—15 percent
Contrasting inclusions:
Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow, 15 to 50 percent slopes—6 percent
Xerolic Haplargids, loamy-skeletal, mixed, mesic, shallow, 15 to 50 percent slopes—5 percent
Xeric Torriorthents, sandy, mixed, mesic, 4 to 15 percent slopes—4 percent
Characteristics of the Genaw Soil
Classification: Xericoll Haplorgids, loamy, mixed, mesic, shallow
Positions on landscape: Summit and shoulder slopes of hills
Parent material: Loess mantle over residuum derived from tuffaceous sediment
Slope: 4 to 15 percent
Elevation: 5,600 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, Wyoming big sagebrush

Typical Profile
Rock fragments on surface: 25 percent pebbles
Depth: 0 to 6 inches
Texture: Very fine sandy loam
Structure: Platy
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 6 to 11 inches
Texture: Gravelly loam, gravelly clay loam
Structure: Angular blocky
Consistency: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 11 to 16 inches
Texture: Very gravelly loam
Structure: Massive
Consistency: Hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5

Depth: 16 inches
Kind of material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.49; T value—1; wind erodibility group—3

Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Orovida Soil
Classification: Durixerolic Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Loess mantle that is high in content of volcanic ash over mixed alluvium
Slope: 2 to 8 percent
Elevation: 5,600 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile
Depth: 0 to 8 inches
Texture: Fine sandy loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Neutral
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 8 to 20 inches
Texture: Fine sandy loam, loam
Structure: Subangular blocky
Consistency: Slightly hard, very friable
Reaction: Mildly alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2

Depth: 20 to 60 inches
Texture: Stratified fine sandy loam to silt loam
Structure: Massive
Consistency: Slightly hard, friable
Reaction: Moderately alkaline
Salinity: 4 to 8 millimhos per centimeter
Sodicity (SAR): 0 to 5

Soil and Water Features
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 4 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (upper layer): K value—0.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Puett Soil
Classification: Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow
Positions on landscape: Convex side slopes of hills
Parent material: Residuum derived from tuff and sandstone
Slope: 15 to 30 percent
Elevation: 5,600 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Bluegrass, Wyoming big sagebrush, Indian ricegrass, black sagebrush

Typical Profile
Rock fragments on surface: 5 percent pebbles
Depth: 0 to 4 inches
Texture: Fine sandy loam
Structure: Platy
Consistency: Soft, very friable
Reaction: Moderately alkaline
Depth: 4 to 15 inches
Texture: Coarse sandy loam, sandy loam
Structure: Massive
Consistency: Soft, friable
Reaction: Moderately alkaline
Depth: 15 inches
Kind of material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1.3 to 3.0 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (upper layer): K value—0.28; T value—1; wind erodibility group—3
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions
Inclusion 1
Classification: Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow

Positions on landscape: Convex, eroded side slopes of hills
Distinctive present vegetation: Wyoming big sagebrush, purple sage, Indian ricegrass

Inclusion 2
Classification: Xerolic Hapl塘rgids, loamy-skeletal, mixed, mesic, shallow
Positions on landscape: Concave side slopes of hills
Distinctive present vegetation: Black sagebrush, rabbitbrush, bluegrass

Inclusion 3
Classification: Xeric Torriorthents, sandy, mixed, mesic
Positions on landscape: Sand dunes along the lower margin of hills
Distinctive present vegetation: Spiny hopsage, Wyoming big sagebrush, needleandthread

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Genaw Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Orovada Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Puett Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Genaw Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Moderate—slope, depth to rock, frost action
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Orovada Soil
Range seeding: Fair—to arid
Roadfill: Good
Topsoil: Fair—small stones, thin layer
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Puett Soil
Range seeding: Poor—droughty, erodes easily
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, slope
Daily cover for landfill: Poor—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—seepage, piping
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Genaw soil—Vlls, nonirrigated; Orovida soil—Ille, irrigated, and Vlc, nonirrigated: Puett soil—Vlle, nonirrigated
Range site: Genaw and Orovida soils—02BB010N; Puett soil—025X025N; Inclusion 1—024X045N; Inclusion 2—024X030N; Inclusion 3—024X017N

4073—Genaw-Broyles-PerlOr association

Positions on landscape: Low, rolling hills

Composition

Major components:
Genaw gravelly loam, 4 to 8 percent slopes—30 percent
Broyles gravelly very fine sandy loam, 4 to 8 percent slopes—30 percent
PerlOr fine sandy loam, 8 to 15 percent slopes—25 percent

Contrasting inclusions:
Xerollic Haplargids, loamy, mixed, mesic, shallow, 0 to 2 percent slopes—7 percent
Xerollic Camborthids, loamy, mixed, mesic, shallow, 15 to 30 percent slopes—4 percent
Duric Camborthids, coarse-loamy, mixed, mesic, 2 to 4 percent slopes—4 percent

Characteristics of the Genaw Soil

Classification: Xerollic Haplargids, loamy, mixed, mesic, shallow
Positions on landscape: Summits and side slopes of hills
Parent material: Loess mantle over residuum derived from tuffaceous sediment
Slope: 4 to 8 percent
Elevation: 5,600 to 8,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days
Dominant present vegetation: Indian ricegrass, bottlebrush squirreltail, Wyoming big sagebrush, spiny hopsage

Typical Profile
Rock fragments on surface: 25 percent pebbles
Depth: 0 to 6 inches
Texture: Gravelly loam
Structure: Platy
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 2 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 6 to 11 inches
Texture: Gravelly loam, gravelly clay loam
Structure: Angular blocky
Consistence: Slightly hard, very friable
Reaction: Moderately alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 2
Depth: 11 to 16 inches
Texture: Very gravelly loam
Structure: Massive
Consistence: Hard, friable
Reaction: Strongly alkaline
Salinity: 0 to 4 millimhos per centimeter
Sodicity (SAR): 0 to 5
Depth: 16 inches
Kind of material: Weathered bedrock

Soil and Water Features
Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (upper layer): K value—0.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Broyles Soil

Classification: Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: Inset fans
Parent material: Thin loess mantle over mixed alluvium
Slope: 4 to 8 percent
Elevation: 5,600 to 6,000 feet  
Average annual precipitation: About 7 inches  
Average annual air temperature: About 49 degrees F  
Frost-free season: About 120 days  
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

**Typical Profile**

*Rock fragments on surface:* 25 percent pebbles  
*Depth:* 0 to 13 inches  
*Texture:* Gravelly very fine sandy loam  
*Structure:* Massive  
*Consistency:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 2 to 4 millimhos per centimeter  
*Sodicity (SAR):* 5 to 13

*Depth:* 13 to 60 inches  
*Texture:* Stratified loam to gravelly loamy sand  
*Structure:* Massive  
*Consistency:* Hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 8 to 16 millimhos per centimeter  
*Sodicity (SAR):* 25 to 46

**Soil and Water Features**

*Depth to a seasonal high water table:* More than 60 inches  
*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 6.2 to 7.4 inches  
*Water-supplying capacity:* 7 inches  
*Runoff:* Slow  
*Hydrologic group:* B  
*Erosion factors (upper layer):* K value—0.32; T value—5; wind erodibility group—4  
*Hazard of erosion:* By water—slight; by wind—severe  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—moderate  
*Potential for frost action:* Low

**Characteristics of the Perlor Soil**

*Classification:* Typic Torrorthents, loamy, mixed (calcareous), mesic, shallow  
*Positions on landscape:* South-facing side slopes of hills  
*Parent material:* Loess cap over residuum derived from tuffaceous sediment  
*Slope:* 8 to 15 percent  
*Elevation:* 5,600 to 6,000 feet  
*Average annual precipitation:* About 8 inches  
*Average annual air temperature:* About 47 degrees F  
*Frost-free season:* About 120 days  
*Dominant present vegetation:* Indian ricegrass, bluegrass, shadscale, bud sagebrush  

**Typical Profile**

*Rock fragments on surface:* 10 percent pebbles  
*Depth:* 0 to 7 inches  
*Texture:* Fine sandy loam  
*Structure:* Platy  
*Consistency:* Slightly hard, friable  
*Reaction:* Moderately alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 4

*Depth:* 7 to 14 inches  
*Texture:* Loam, sandy loam, gravelly sandy loam  
*Structure:* Subangular blocky  
*Consistency:* Slightly hard, friable  
*Reaction:* Strongly alkaline  
*Salinity:* 0 to 4 millimhos per centimeter  
*Sodicity (SAR):* 0 to 5

*Depth:* 14 inches  
*Kind of material:* Weathered bedrock

## Soil and Water Features

*Depth to bedrock:* 10 to 14 inches  
*Depth to a seasonal high water table:* More than 60 inches

*Frequency of flooding:* None  
*Permeability:* Moderate  
*Available water capacity:* 1.6 to 2.3 inches  
*Water-supplying capacity:* 6 inches  
*Runoff:* Medium  
*Hydrologic group:* D  
*Erosion factors (upper layer):* K value—0.32; T value—1; wind erodibility group—3  
*Hazard of erosion:* By water—slight; by wind—slight  
*Shrink-swell potential:* Low  
*Corrosivity:* To steel—high; to concrete—low  
*Potential for frost action:* Low

### Contrasting Inclusions

#### Inclusion 1

*Classification:* Xerollic Haplargids, loamy, mixed, mesic, shallow  
*Positions on landscape:* Summits of hills  
*Distinctive present vegetation:* Wyoming big sagebrush, spiny hopsage

#### Inclusion 2

*Classification:* Xerollic Camborthids, loamy, mixed, mesic, shallow  
*Positions on landscape:* The lower, south-facing side slopes of hills  
*Distinctive present vegetation:* Wyoming big sagebrush, galleta, Indian ricegrass

#### Inclusion 3

*Classification:* Duric Camborthids, coarse-loamy, mixed, mesic
Positions on landscape: The lower parts of inset fans
Distinctive present vegetation: Black greasewood, shadscale, bud sagebrush

Major Current Uses
Livestock grazing, wildlife habitat

Suitability for Wildlife Habitat Elements

Genaw Soil
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair

Broyles Soil
Wild herbaceous plants (nonirrigated): Very poor
Shrubs (nonirrigated): Very poor

Perlor Soil
Wild herbaceous plants (nonirrigated): Poor
Shrubs (nonirrigated): Poor

Suitability and Limitations for Selected Uses

Genaw Soil
Range seeding: Poor—droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Moderate—depth to rock, frost action
Pond reservoir areas: Severe—depth to rock
Embankments, dikes, and levees: Severe—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Broyles Soil
Range seeding: Poor—too arid, excess salt
Roadfill: Good
Topsoil: Poor—small stones, excess salt
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Perlor Soil
Range seeding: Poor—too arid, droughty
Roadfill: Poor—depth to rock
Topsoil: Poor—depth to rock, small stones
Daily cover for landfill: Poor—depth to rock
Shallow excavations: Severe—depth to rock
Local roads and streets: Moderate—depth to rock, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—piping

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Interpretive Groups
Land capability classification: Genaw and Perlor soils—
Vils, nonirrigated; Broyles soil—Ile, irrigated, and Vllc, nonirrigated
Range site: Genaw soil—024X020N; Broyles and Perlor soils—024X002N; Inclusion 1—024X020N; Inclusion 2—024X045N; Inclusion 3—024X003N

4140—Welch loam, drained, 2 to 8 percent slopes

Positions on landscape: Intermountain drainageways

Composition

Major component:
Welch loam, drained, 2 to 8 percent slopes—90 percent
Contrasting inclusions:
Cumulic Haploquolls, fine-loamy, mixed, frigid, 2 to 8 percent slopes—6 percent
Welch loam, 2 to 8 percent slopes—4 percent

Characteristics of the Welch Soil
Classification: Cumulic Haplaquolls, fine-loamy, mixed, frigid
Positions on landscape: Inset fans in narrow mountain drainageways
Parent material: Mixed alluvium
Slope: 2 to 8 percent
Elevation: 6,500 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 80 days
Dominant present vegetation: Basin wildrye, basin big sagebrush, wheatgrass, bluegrass

Typical Profile
Depth: 0 to 4 inches
Texture: Loam
Structure: Subangular blocky
Consistence: Soft, very friable
Reaction: Neutral

Depth: 4 to 60 inches
Texture: Stratified sandy loam to silty clay loam
Structure: Massive
Consistence: Slightly hard, friable
Reaction: Mildly alkaline

Soil and Water Features
Depth to a seasonal high water table: 48 to 72 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 9.5 to 12.0 inches
Water-supplying capacity: 14 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (upper layer): K value—0.32; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: High

**Contrasting Inclusions**

**Inclusion 1**
Classification: Cumulic Haploxerolls, fine-loamy, mixed, frigid
Positions on landscape: Concave side slopes adjacent to channels
Distinctive present vegetation: Aspen, willow, rose, sedge, basin big sagebrush, basin wildrye

**Inclusion 2**
Classification: Cumulic Hapludollis, fine-loamy, mixed, frigid
Positions on landscape: Adjacent to seeps, springs, and unchanneled streambeds
Distinctive present vegetation: Iris, sedge, bluegrass, alpine timothy, hairgrass, rush

**Major Current Uses**
Livestock grazing, wildlife habitat

**Suitability for Wildlife Habitat Elements**
Wild herbaceous plants (nonirrigated): Fair
Shrubs (nonirrigated): Fair
Wetland plants: Poor
Shallow water areas: Very poor

**Suitability and Limitations for Selected Uses**
Range seeding: Good
Roadfill: Poor—low strength
Topsoil: Fair—small stones
Daily cover for landfill: Fair—too clayey
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Slight
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

**Interpretive Groups**
Land capability classification: Welch soil—IIIw, irrigated; Vlw, nonirrigated
Range site: Welch soil—025X003N; Inclusion 1—028B025N; Inclusion 2—025X005N
Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is the land that is best suited to food, feed, forage, fiber, and oilseed crops. It may be cultivated land, pasture, woodland, or other land, but it is not urban or built-up land or water areas. It either is used for food or fiber crops or is available for those crops. The soil qualities, growing season, and moisture supply are those needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. Prime farmland produces the highest yields with minimal expenditure of energy and economic resources, and farming it results in the least damage to the environment.

Prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The level of acidity or alkalinity is acceptable. Prime farmland has few or no rocks and is permeable to water and air. It is not excessively erosible or saturated with water for long periods and is not frequently flooded during the growing season. The slope ranges mainly from 0 to 4 percent. More detailed information about the criteria for prime farmland is available at the local office of the Soil Conservation Service.

A recent trend in land use has been the conversion of prime farmland to urban and industrial uses. The loss of prime farmland to other uses puts pressure on lands that are less productive than prime farmland.

The map units in the survey area that are listed at the end of this section meet the requirements for prime farmland in areas where an adequate and dependable supply of irrigation water is available. If only part of a unit meets the requirements for prime farmland, that part is indicated in parentheses after the map unit name. On some of the soils, measures should be used to overcome a hazard or limitation, such as salinity, flooding, wetness, or droughtiness. The location of each map unit is shown on the detailed soil maps at the back of this publication. Soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

<table>
<thead>
<tr>
<th>Soil Association</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>160</td>
<td>Batan association (Batan soil, slightly saline)</td>
</tr>
<tr>
<td>162</td>
<td>Batan-Kelk association (Kelk soil, occasionally flooded)</td>
</tr>
<tr>
<td>175</td>
<td>Beoska-Whirlo-Misad association (Whirlo soil)</td>
</tr>
<tr>
<td>180</td>
<td>Needle Peak-Batan-Yobe association (Needle Peak soil)</td>
</tr>
<tr>
<td>231</td>
<td>Broyles very fine sandy loam, 2 to 4 percent slopes</td>
</tr>
<tr>
<td>235</td>
<td>Broyles-Creemon association</td>
</tr>
<tr>
<td>237</td>
<td>Broyles-Beoska-Orovada association (Broyles soil)</td>
</tr>
<tr>
<td>249</td>
<td>Bubus association (Bubus soil, slightly saline)</td>
</tr>
<tr>
<td>290</td>
<td>Creemon silt loam, 0 to 2 percent slopes</td>
</tr>
<tr>
<td>291</td>
<td>Creemon-Wholan association</td>
</tr>
<tr>
<td>295</td>
<td>Creemon-Cren association</td>
</tr>
<tr>
<td>296</td>
<td>Creemon-Hessing association</td>
</tr>
<tr>
<td>297</td>
<td>Creemon-Rasille-Tulase association</td>
</tr>
<tr>
<td>298</td>
<td>Creemon-Misad association (Creemon soil)</td>
</tr>
<tr>
<td>491</td>
<td>Enko-Orovada association, gently sloping</td>
</tr>
<tr>
<td>492</td>
<td>Enko-Glyphs association</td>
</tr>
<tr>
<td>493</td>
<td>Enko-Orovada association, nearly level</td>
</tr>
<tr>
<td>512</td>
<td>Hessing-Rolley association</td>
</tr>
<tr>
<td>560</td>
<td>Jesse Camp silt loam</td>
</tr>
<tr>
<td>632</td>
<td>McConnel-Orovada-Misad association (Orovada soil)</td>
</tr>
<tr>
<td>633</td>
<td>McConnel-Rasille-Wholan association (Rasille and Wholan soils)</td>
</tr>
<tr>
<td>635</td>
<td>McConnel-Rasille association (Rasille soil)</td>
</tr>
<tr>
<td>636</td>
<td>McConnel-Defler-Rasille association (Rasille soil)</td>
</tr>
<tr>
<td>637</td>
<td>McConnel-Orovada association (Orovada soil, rarely flooded)</td>
</tr>
<tr>
<td>Page</td>
<td>Association/Soil Description</td>
</tr>
<tr>
<td>------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>638</td>
<td>McConnel-Wholan association (Wholan soil)</td>
</tr>
<tr>
<td>675</td>
<td>Filiran-Buffaran-Orovada association (Orovada soil)</td>
</tr>
<tr>
<td>700</td>
<td>Orovada-Rasille-Wholan association</td>
</tr>
<tr>
<td>701</td>
<td>Orovada fine sandy loam, 2 to 4 percent slopes</td>
</tr>
<tr>
<td>702</td>
<td>Orovada-Creemon association</td>
</tr>
<tr>
<td>703</td>
<td>Orovada fine sandy loam, 0 to 2 percent slopes</td>
</tr>
<tr>
<td>704</td>
<td>Orovada-McConnel association (Orovada soil)</td>
</tr>
<tr>
<td>705</td>
<td>Orovada-Valmy association</td>
</tr>
<tr>
<td>751</td>
<td>Poorcal-Lopwash association</td>
</tr>
<tr>
<td>850</td>
<td>Relley silt loam, 0 to 2 percent slopes</td>
</tr>
<tr>
<td>854</td>
<td>Relley silt loam, frequently flooded, 0 to 2 percent slopes</td>
</tr>
<tr>
<td>942</td>
<td>Shipley silt loam, occasionally flooded, 0 to 2 percent slopes</td>
</tr>
<tr>
<td>950</td>
<td>Silverado sandy loam, 0 to 2 percent slopes</td>
</tr>
<tr>
<td>1011</td>
<td>Stampede-Handy-Caniwe association (Caniwe soil)</td>
</tr>
<tr>
<td>1041</td>
<td>Tenabo-Orovada-Buffaran association (Orovada soil)</td>
</tr>
<tr>
<td>1092</td>
<td>Tulase-Babus-McConnel association (Babus soil)</td>
</tr>
<tr>
<td>1146</td>
<td>Wendane-Sonoma-Valmy association (Valmy soil)</td>
</tr>
<tr>
<td>1169</td>
<td>Whirl-Broyles association (Broyles soil)</td>
</tr>
<tr>
<td>1173</td>
<td>Wholan silt loam, alkaline</td>
</tr>
<tr>
<td>1177</td>
<td>Wholan-Rasille association, alkaline</td>
</tr>
<tr>
<td>1178</td>
<td>Wholan-Rasille association, nonalkaline</td>
</tr>
<tr>
<td>1287</td>
<td>Ricert-Orovada-Broyles association (Orovada soil)</td>
</tr>
</tbody>
</table>
Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture: as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

The system of land capability classification used by the Soil Conservation Service is explained in this section, and general management needed for crops and pasture is suggested.

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, e,
w, s, or c, to the class numeral, for example, Ile. The letter e shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; w shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); s shows that the soil is limited mainly because it is shallow, droughty, or stony; and c, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by w, s, or c because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

Planners of management systems for individual fields or farms in the survey area should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

The aim of good land use is to produce the greatest amount of the most desirable crops while also protecting and improving the soil. This can be achieved by seeding plants that are well suited to the soil and by applying proper management practices that protect the soil and maintain soil tilth.

Different management is needed on diverse kinds of soil. Basic essential practices, however, apply to all cultivated soils. These practices are discussed in the following paragraphs.

Conservation cropping system. A conservation cropping system consists of a crop rotation and cultural and management practices that protect the soil from erosion and maintain or improve fertility and tilth. It should include perennial legumes, grass-legume mixtures, or other crops that produce large quantities of residue to compensate for crops in the rotation that produce little or no residue.

A typical cropping system used in the survey area is 8 to 10 years of alfalfa followed by 2 years of small grain. Residue from small grain is returned to the soil, and tillage is kept to a minimum.

Erosion control. Protection of the surface layer from water erosion and soil blowing is important because this layer contains most of the organic matter and is generally more fertile than the rest of the soil. Soil blowing can be controlled by leaving a protective plant cover on the surface, by using minimum tillage during windy or stormy periods, and by tilling in spring and then immediately seeding. Water erosion generally is controlled by leveling and by applying irrigation water at the proper rate.

Application of plant nutrients. Most crops in the survey area respond well to applications of liquid or solid fertilizer. Specific fertilizer requirements are based on the kind of crop grown and the nutrient level of the soil. Applications of nitrogen and phosphorus increase the production of small grain and aid in establishing alfalfa. Unless the soils contain sufficient amounts of available phosphorus, established alfalfa generally requires only applications of phosphorus, which should be applied every 2 years throughout the duration of the stand.

Irrigation water management. Proper irrigation water management is the application of irrigation water at rates and in amounts adequate to produce high crop yields and to minimize soil and water losses. Water is applied according to the crop needs and the characteristics of the soil.

An efficient irrigation distribution system is one that has enough capacity to meet the needs of the crops grown during periods of peak use. The system should be located and controlled so that seepage losses are minimal and so that it carries the required flow without causing erosion.

Efficient application of water involves consideration of the available water capacity, the rate at which water enters and moves through the soil, and the amount of water required by the crop grown. Most crops should be irrigated when 40 to 50 percent of the available moisture in the top half of the root zone has been used.

Management of salt- and sodium-affected soils. Like most soils in arid and subarid regions, many of the soils in this survey area contain at least small quantities of soluble salts and sodium. In some soils high concentrations of salts and sodium limit or prevent the growth of crops. Because precipitation is low and the rate of evaporation is high, salts accumulate in the root zone. In addition, many low-lying areas receive salty water from runoff or seepage. Surface evaporation of this water generally results in an increase in content of soluble salts on or in the soils. In some areas that have a high water table, water rises in the soil by capillary action and carries dissolved salts with it. The soluble salts can be moved to any part of the soil profile.

A soil that contains excessive amounts of soluble salts is called a saline soil. One that contains excessive amounts of exchangeable sodium is called a sodic, or alkali, soil. A soil that contains excessive amounts of both soluble salts and sodium is called a saline-sodic soil. Saline-sodic phases of several of the soils in the survey have been mapped. The map unit name in most cases does not give the degree to which these soils are affected, nor does it indicate whether they contain both salts and sodium. This information is given in the map unit descriptions.
Four classes of salinity are recognized in the detailed soil map unit descriptions. These classes are as follows:

**Nonsaline soils** are those that contain less than 0.15 percent soluble salts. The electrical conductivity of the saturation extract is less than 4 millimhos per centimeter at 25 degrees C.

**Slightly saline soils** are those that contain 0.15 to 0.35 percent soluble salts. The electrical conductivity of the saturation extract is 4 to 8 millimhos per centimeter at 25 degrees C.

**Moderately saline soils** are those that contain 0.35 to 0.65 percent soluble salts. The electrical conductivity of the saturation extract is 8 to 16 millimhos per centimeter at 25 degrees C.

**Strongly saline soils** are those that contain more than 0.65 percent soluble salts. The electrical conductivity of the saturation extract is more than 16 millimhos per centimeter at 25 degrees C.

Four classes of sodicity are recognized in the detailed soil map unit descriptions. These classes are as follows:

**Nonsodic soils** contain less than 15 percent exchangeable sodium.

**Slightly sodic soils** contain 15 to 25 percent exchangeable sodium.

**Moderately sodic soils** contain 25 to 40 percent exchangeable sodium.

**Strongly sodic soils** contain more than 40 percent exchangeable sodium.

Soils differ in the kinds of salts they contain and in the practices needed for improvement; however, some general guidelines can be given. For example, an adequate supply of good-quality water and an adequate drainage system are needed to reclaim any saline or sodic soils. Two methods of applying water are commonly used. One method is land leveling that results in flat basins in which the water can accumulate. The other method involves leveling the land to a uniform grade and then flooding between border dikes. If drainage is adequate and if large amounts of water are used, the soluble salts can be leached out of the root zone by either method. The process is more difficult if a soil contains an excessive amount of exchangeable sodium. In addition to drainage and leaching, other practices are needed to improve sodium-affected soils.

Chemical amendments used to replace sodium are gypsum and its various forms, including gyspite, anhydrite, and selenite, as well as elemental sulfur, sulfuric acid, iron sulfate, and aluminum sulfate. Any of these amendments can be used successfully, but the soils react to some faster than to others. The amount and type of amendment needed can be determined by laboratory analysis of soil samples, which indicates the amounts of sodium that must be replaced if the soil is to be improved.

An alternative to reclamation through the use of large quantities of gypsum is the seeding of salt- and sodium-tolerant grasses. Among these are tall wheatgrass, western wheatgrass, and alta fescue. These grasses can grow in soils that have relatively high concentrations of both soluble salts and sodium.

**Proper pasture management.** Proper pasture management includes adjusting stocking rates or the season of use so that the maximum growth and survival of high-quality grasses and legumes can be achieved. A common method is to rotate grazing among several pastures. This method allows adequate regrowth in each pasture. Livestock should be excluded when the pastures are wet. Allowing livestock to graze on wet pasture results in compaction of the soil, a decrease in the water intake rate, and deterioration of soil structure. Proper irrigation management and drainage help to keep the pastures in good condition. Increased yields can be obtained by applying commercial fertilizer and barnyard manure. Weeds generally can be controlled by mowing. The droppings of manure should be spread with a drag each spring.

**Rangeland**

About 98 percent of the land in the survey area is rangeland. About 75 percent of the agricultural income is derived from livestock, principally cattle. Cow-calf operations are dominant, but cow-calf-yearling operations also are common. Most of the rangeland is administered by the Bureau of Land Management. The privately owned land is mainly in the Reese River, Big Smoky, and Grass Valleys. Ranches vary in size from less than 5,000 acres to about 100,000 acres.

On some ranches the forage produced on the rangeland is supplemented by aftermath grazing on hayland and small grain stubble fields in fall. In winter the native forage generally is supplemented by hay, but some areas of winter range are in the survey area.

For each map unit suitable for use as rangeland, a table in the section "Rangeland Plants and Woodland Understory” shows the grasses, forbs, and shrubs that make up the potential native plant community on each major soil and contrasting inclusion; the common plant name and plant symbol for the characteristic vegetation; the average percent composition for each species in the potential plant community; the range site symbol; and the total annual production of vegetation in favorable, normal, and unfavorable years. A more detailed ecological description of each range site, identified by symbol, is provided in a technical guide available in the location.
local office of the Soil Conservation Service.

A range site is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other range sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was established during this survey; thus, range sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table also are important.

Potential production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, flowers, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

Dry weight is the total annual yield per acre reduced to a common percent of air-dry moisture.

Characteristic vegetation—the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil—is listed by common name. The expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals, the grazing season, and the availability of forage. Many plants, trees, and shrubs are inaccessible for foraging animals.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only. It does not have a specific meaning that pertains to the present plant community for a given use.

Generally, the objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Grazing management should be at an intensity that maintains enough plant cover to protect the soil and that maintains or improves the quantity and quality of desirable vegetation. Proper management applies to all grazing animals, including livestock, game animals, and wild horses.

The most practical and efficient way to achieve good management of livestock grazing is with a planned grazing system. A good system is one in which two or more grazing units are alternately rested from grazing in a planned sequence over a period of years. The rest period should extend at least through the growing season of the key plants. Using such a system ensures that the same unit is not grazed at the same time year after year.

Planned grazing systems should be designed to fit the individual operating unit but still meet management objectives. Using livestock watering developments, fencing, salting, or constructing livestock trails can help to achieve a better distribution of grazing.

Brush management is needed when the less desirable woody species increase beyond the natural proportions for the site. It can benefit both livestock and wildlife and can reduce sedimentation and improve watershed quality.

The use of chemicals is effective in brush management. When chemicals are properly applied in a timely manner, good results can be expected. The understory should include enough desirable plant species to respond to the treatment.

Prescribed burning is also effective in brush management. It is relatively inexpensive but requires precautions. Its success requires a good understory to provide fuel, and proper timing of the burning is critical. It is not so selective as chemical treatment.

Mechanical treatment practices, such as plowing, chaining, or beating, are effective on certain sites, but the cost is high.

Range seeding may be needed when the range has deteriorated to a point where desired plant species have disappeared or as critical area treatment following wildfire. Sites to be seeded should be evaluated on the basis of the soil, climate, topography, and planned use to determine the species that are adapted and the seeding techniques that can be used.

Even though adapted species and improved techniques are applied, successful seeding in this survey area is strongly influenced by rainfall.
Precipitation fluctuates drastically from one year to the next, even in the areas that receive higher amounts of rainfall. The success of range seeding depends on the amount of moisture available during the growing season. Each soil is rated in the detailed map unit descriptions for planned range seeding. A plant cover should be maintained to prevent accelerated erosion on the soils that are poorly suited to seeding. The criteria used to develop the ratings are listed in the Appendix.

Range seeding ratings are relative ratings that suggest the number of successful seeding establishments that might be expected during a given period of years. The ratings are not intended to be a measure of the total annual yield. Productivity is dependent upon the interaction of most of the soil properties and characteristics that are considered. In addition, the number of plant species adapted to the soil decreases with decreasing soil suitability.

Successful seeding of depleted areas of rangeland in the survey area reduces the runoff rate and thus helps to control erosion. The soils that are best suited to seeding are moderately deep or deeper; receive adequate moisture and can retain it; are resistant to sheet, rill, and wind erosion; are free of salts and sodium; and have a medium textured upper layer that is relatively free of rock fragments and is resistant to crusting.

Woodland Understory Vegetation

Understory vegetation consists of grasses, forbs, shrubs, and other plants. If well managed, some woodland can produce enough understory vegetation to support grazing of livestock or wildlife, or both, without damage to the trees.

The quantity and quality of understory vegetation vary with the kind of soil, the age and kind of trees in the canopy, the density of the canopy, and the depth and condition of the litter.

The total production of understory vegetation, indicated in the section "Rangeland Plants and Woodland Understory," includes the herbaceous plants and the leaves, twigs, and fruit of woody plants up to a height of 4.5 feet. It is expressed in pounds per acre of air-dry vegetation in favorable, normal, and unfavorable years. In a favorable year, soil moisture is above average during the optimum part of the growing season; in a normal year, soil moisture is average; and in an unfavorable year, it is below average.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection. All windbreaks in the survey area require irrigation.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well-prepared site and maintained in good condition.

Information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from local offices of the Soil Conservation Service or the Cooperative Extension Service or from a commercial nursery.

Wildlife Habitat

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

Wildlife is a valuable resource in the survey area. It provides opportunities for outdoor activities, such as hunting and fishing.

Wildlife is a product of the soil. Like crops, wildlife responds to good management. Most managed wildlife habitat is created, improved, or maintained by planting suitable vegetation, by manipulating existing vegetation to bring about the natural establishment of desired plants, or by a combination of both. The habitat elements needed by specific species of wildlife generally require several kinds of soil and a combination of land uses. The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include mule deer, valley quail, pheasant, meadowlark, field sparrow, and cottontail. Irrigated
areas of general soil map units 2, 3, and 4 are used extensively by openland wildlife.

**Habitat for woodland wildlife** consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include sage grouse, woodcock, woodpeckers, cottontail, jackrabbit, coyote, and mule deer. General soil map unit 18 and scattered areas of unit 19 are used extensively by woodland wildlife.

**Habitat for wetland wildlife** consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, mule deer, and beaver. General soil map unit 3 and other small riparian areas are used by wetland wildlife.

**Habitat for rangeland wildlife** consists of areas of shrubs and wild herbaceous plants. Wildlife attracted to rangeland include antelope, mule deer, sage grouse, meadowlark, lark bunting, chukar, badger, and jackrabbit. General soil map unit 2, units 5 through 10, and units 12, 13, 15, 16, 19, and 20 are used extensively by rangeland wildlife.

In the detailed soil map unit descriptions, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat. The elements of wildlife habitat are described in the following paragraphs.

**Grain and seed crops** are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

**Grasses and legumes** are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, orchardgrass, bromegrass, clover, and alfalfa.

**Wild herbaceous plants** are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are needlegrass, balsamroot, globemallow, wheatgrass, and bluegrass.

**Coniferous plants** furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are singleleaf pinyon and juniper.

**Shrubs** are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are mountain mahogany, bitterbrush, snowberry, and big sagebrush.

**Wetland plants** are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, reed canarygrass, saltgrass, cordgrass, rushes, sedges, and cattail.

**Shallow water areas** have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

**Engineering**

In the section "Detailed Soil Map Units," information for planning land uses related to urban development and to water management is provided. Soils are rated for various uses, and the most limiting features are identified. The ratings are given for the following selected uses: roadfill; topsoil; daily cover for landfill; shallow excavations; local roads and streets; pond reservoir areas; embankments, dikes, and levees; sand; and gravel. For some soils the restrictive features that affect drainage, irrigation, and terraces and diversions also are given. More information can be obtained from local offices of the Soil Conservation Service.

The information is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part
of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings. The criteria used to determine the ratings are provided in the Appendix. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the map unit descriptions, along with the soil maps, the taxonomic unit descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

In the detailed map unit descriptions, the soils are rated for various uses and the most limiting features are identified. The ratings are based on observed performance of the soils and on the estimated data given in the map units and lab test data. The limiting features are defined in the Glossary.

Soil interpretations are periodically updated as more is learned about a soil and its behavior under specific uses. New technology can change the relative suitability of a soil for various uses; however, the soil maps remain useful after the soil interpretations originally published with them have become outdated. For this reason, the criteria and guides that were used to make the interpretations presented in the detailed map units are provided in the Appendix. These criteria have been taken directly from the National Soils Handbook (28).

The limitations for shallow excavations, local roads and streets, pond reservoir areas, and embankments, dikes, and levees are considered slight if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; moderate if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and severe if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage
potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

*Embankments, dikes, and levees* are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In the detailed map unit descriptions, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the upper layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

In the detailed map unit descriptions, the soils are rated for use as roadfill, topsoil, and daily cover for landfill.

*Roadfill* is soil material that is excavated in one place and used in road embankments in another place. The soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the upper layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. These soils may have layers of suitable material, but the material is less than 3 feet thick.

*Topsoil* is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The upper layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

*Daily cover for landfill* is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or muddy and are difficult to spread; sandy soils are subject to wind erosion.
After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The upper layer generally has the best workability, more organic matter, and the best potential for plants. Material from the upper layer should be stockpiled for use as the final cover.

The soils are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. Only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the taxonomic unit descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is as much as 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

In some of the detailed map unit descriptions, the restrictive features that affect drainage, irrigation, and terraces and diversions are listed.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.
Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, given in the section "Detailed Soil Map Units," are explained in the following paragraphs.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties given in the tables and map unit descriptions include the range of grain-size distribution, the engineering classifications, and some physical and chemical properties of the major layers of each soil. Pertinent soil and water features are given in the map unit descriptions.

Engineering Index Properties

Estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area are given in the detailed map unit descriptions and in table 5. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each taxonomic unit under "Taxonomic Units and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravely." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (2) and the system adopted by the American Association of State Highway and Transportation Officials (1).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments ranging from 2 millimeters in diameter to larger than 3 inches are indicated as a percentage of the total soil on a dry-weight basis. Cobbles and stones are larger than 3 inches in diameter, and pebbles are 2 millimeters to 3 inches in diameter. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. The estimates are rounded to the nearest 5 percent.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The
sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

**Physical and Chemical Properties**

Estimates of some characteristics and features that affect soil behavior are given in the detailed map unit descriptions. The estimates are based on field observations and on test data for these and similar soils. Many of the specific terms used to express these properties are defined in the Glossary.

**Permeability** refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

**Available water capacity** refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in total inches of water for the soil profile. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

**Soil reaction** is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

**Salinity** is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the map unit descriptions. Salinity affects the suitability of a soil for range seeding and crop production, the stability of the soil if used as construction material, and the potential of the soil to corrode metal and concrete.

**Sodicity** is a measure of exchangeable sodium in the soil at saturation. It is expressed as a sodium adsorption ratio (SAR), or the ratio of sodium to calcium plus magnesium. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The sodicity of irrigated soils is affected by the quality of irrigation water and management of the soil. Hence, the sodicity of soils in individual fields can differ greatly from the value given in the map unit descriptions. Sodicity affects the suitability of a soil for range seeding and crop production and the stability of the soil if used as construction material.

**Shrink-swell potential** is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are low, a change of less than 3 percent; moderate, 3 to 6 percent; and high, more than 6 percent. Very high, greater than 9 percent, is sometimes used.

**Erosion factor K** indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE)
to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, very fine sand, sand, and organic matter (up to 4 percent) and on soil structure and permeability. The estimates are modified by the presence of rock fragments. Values of K range from 0.02 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water. The estimate for erosion factor K applies only to the surface layer.

_Erosion factor T_ is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

_Wind erodibility groups_ are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Calcareous loams, silt loams, clay loams, and silty clay loams. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

5. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control wind erosion are used.

6. Calcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils are slightly erodible. Crops can be grown if ordinary measures to control wind erosion are used.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can be grown if ordinary measures to control wind erosion are used.

8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

The _hazard of erosion_ is an estimate of the likelihood of erosion by water and wind when the soil is bare. The hazard of erosion by water is determined on the basis of erosion factor K and the percent of slope. The hazard of erosion by wind is determined on the basis of the stability of the soil surface and the climate. The guidelines used in estimating the hazard of erosion are given in the Appendix.

**Soil and Water Features**

Estimates of various soil and water features are given in the detailed map unit descriptions. The estimates are used in land use planning that involves engineering considerations.

_Hydrologic soil groups_ are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

_Flooding_, the temporary inundation of an area, is caused by overflowing streams or by runoff from adjacent slopes. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.
The frequency and duration of flooding and the time of year when flooding is most likely are given in the map unit descriptions.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. None means that flooding is not probable; rare that it is unlikely but possible under unusual weather conditions; occasional that it occurs, on the average, no more than once in 2 years; and frequent that it occurs, on the average, more than once in 2 years. Duration is expressed as very brief if less than 2 days, brief if 2 to 7 days, and long if more than 7 days. Probable dates are expressed in months.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. The depth to the seasonal high water table is given in the map unit descriptions. A water table that is seasonally high for less than 1 month is not indicated. Only saturated zones within a depth of about 6 feet are indicated.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping.

Hardpans are cemented or indurated subsurface layers within a depth of 5 feet. Such pans cause difficulty in excavation. Pans are classified as thin or thick. A thin pan is less than 3 inches thick if continuously indurated or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A thick pan is more than 3 inches thick if continuously indurated or more than 18 inches thick if discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Corrosivity pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as low, moderate, or high, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as low, moderate, or high. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.
Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (27). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 6 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Aridisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Orthid (*Orth*, meaning true, plus *id*, from Aridisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Camborthids. (*Camb*, meaning change, plus *orthid*, the suborder of the Aridisols that does not have an argillic or a natric horizon).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extrarudes. The *typic* is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extrarudes have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Camborthids.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, mixed, mesic Typic Camborthids.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the stratum can differ within a series.

Taxonomic Units and Their Morphology

In this section, each taxonomic unit recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each unit. A pedon, a small three-dimensional area of soil, that is typical of the unit in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (26). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (27). Unless otherwise stated, matrix colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the unit.

Because a large part of Lander County was mapped under several private contracts, some of the typical pedons described in this survey are located in the soil survey areas of Lander County, Nevada, North Part, and Eureka County Area, Nevada. As the survey progressed, it was determined that some of the soils in the area had already been mapped under contract. The
typical pedon descriptions already completed for these soils were used, regardless of the survey area in which they occurred. The survey area in which the typical pedon for each taxonomic unit is located is given in the section “Taxonomic Units and Their Morphology.” Characteristics of the soils in a map unit in this survey area are similar but not identical to those of the soils outside the survey area.

The map units of each taxonomic unit are described in the section “Detailed Soil Map Units.”

**Akerue Series**

*Depth class:* Shallow to duripan  
*Drainage class:* Well drained  
*Parent material:* Residuum derived from andesite, rhyolite, and quartzite  
*Positions on landscape:* Low hills, side slopes of mountains  
*Slope:* 15 to 30 percent  
*Mean annual precipitation:* 10 inches  
*Mean annual temperature:* About 44 degrees F  
*Taxonomic class:* Clayey-skeletal, montmorillonitic, frigid, shallow Xerolic Durargids

**Typical Pedon**

About 35 percent of the surface is covered with pebbles, 35 percent with cobbles, and 2 percent with stones.  
*A*—0 to 3 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; weak medium and thick platy structure; slightly hard, very friable, sticky and plastic; few very fine and fine roots; many very fine and fine vesicular pores; 10 percent pebbles, 25 percent cobbles, and 2 percent stones; mildly alkaline (pH 7.4); clear wavy boundary.  
*Bt1*—3 to 6 inches; pale brown (10YR 6/3) very cobbly clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; few thin clay films on faces of peds; 10 percent pebbles and 25 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.  
*Bt2*—6 to 15 inches; light yellowish brown (10YR 6/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; moderate fine and medium angular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine and fine tubular pores; many thick pressure faces on peds; 10 percent pebbles and 35 percent cobbles; mildly alkaline (pH 7.6); abrupt wavy boundary.  
*Bqkm*—15 to 21 inches; very pale brown (10YR 8/4), indurated duripan that has many rock fragments cemented with several continuous laminar layers; light yellowish brown (10YR 6/4) moist; massive; extremely hard; few fine roots in some fractures; violently effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.  
*R*—21 inches; andesite.

**Typical Pedon Location**

*Soil name and map unit in which located:* Akerue very cobbly loam, 15 to 30 percent slopes, in Akerue-Simpark-Punchbowl association  
*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 18 miles east of Austin; about 500 feet north and 1,500 feet west of the southeast corner of sec. 31, T. 18 N., R. 47 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry early in June through October  
*Average annual soil temperature:* 44 to 47 degrees F  
*Depth to the duripan:* 14 to 20 inches  
*Depth to bedrock:* 15 to 26 inches  
*Reaction in the A and Bt horizons:* Neutral or mildly alkaline, increasing in alkalinity with increasing depth  
*Other characteristics:* Silica and lime pendants on rock fragments in the lower part of the Bt horizon in some pedons

**Control section:**  
Content of clay—35 to 45 percent  
Content of rock fragments—35 to 60 percent, mostly cobbles  
*A horizon:*  
Value—5 or 6 dry, 3 or 4 moist  
Chroma—2 or 3  
*Bt horizon:*  
Hue—7.5YR or 10YR  
Value—5 or 6 dry, 3 or 4 moist  
Chroma—3 or 4  
Texture—very cobbly clay loam or very cobbly clay

**Allor Series**

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Parent material:* Alluvium derived from various kinds of rock  
*Positions on landscape:* Fan piedmont remnants
Slope: 0 to 30 percent  
Mean annual precipitation: About 9 inches  
Mean annual temperature: About 48 degrees F  

Taxonomic class: Fine-loamy, mixed, mesic  
Durixerollic Haplargids  

Typical Pedon  

About 30 percent of the surface is covered with pebbles.  

A1—0 to 6 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine vesicular pores; 15 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.  

A2—6 to 12 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.  

Bt—12 to 19 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many very fine and fine roots; common very fine and fine tubular pores; few thin clay films coating ped; 15 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.  

Btq—19 to 34 inches; pale brown (10YR 6/3) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; common very fine and fine tubular pores; few moderately thick and common thin clay films coating ped; 25 percent pebbles and 15 percent weakly cemented durinodes; mildly alkaline (pH 7.8); clear smooth boundary.  

Bq—34 to 42 inches; pale brown (10YR 6/3), weakly silica-cemented gravelly loamy sand, brown (10YR 4/3) moist; massive; very hard, firm, nonsticky and nonplastic; few fine roots; few fine tubular pores; 25 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.8); clear smooth boundary.  

Bqk—42 to 60 inches; pale brown (10YR 6/3), weakly silica-cemented gravelly loamy sand, brown (10YR 4/3) moist; massive; very hard, firm, nonsticky and nonplastic; 55 percent pebbles and 5 percent cobbles; slightly effervescent; moderately alkaline (pH 8.3).  

Typical Pedon Location  

Soil name and map unit in which located: Allor gravelly loam, 4 to 15 percent slopes, in Zaidy-Allor association  
Location in Nevada: Lander County, Nevada, South Part, survey area; about 10 miles northeast of Austin; about 650 feet south and 2,400 feet west of the northeast corner of sec. 21, T. 20 N., R. 45 E.  

Range in Characteristics  

Soil moisture content: Usually dry, but moist in winter and spring  
Average annual soil temperature: 47 to 50 degrees F  
Combined thickness of the A and Bt horizons: 20 to 34 inches  
Depth to the Bq horizon: 20 to 34 inches  
Depth to carbonates (when present): More than 40 inches  

Reaction: Mildly alkaline or moderately alkaline, commonly increasing in alkalinity with increasing depth  
Other characteristics: BA or Bt2 horizon present in some pedons  

Control section:  
Texture—clay loam or sandy clay loam  
Content of clay—27 to 35 percent  
Content of rock fragments—15 to 35 percent, mainly pebbles  

A horizon:  
Value—3 or 4 moist  
Chroma—2 or 3  

Bt horizon:  
Value—5 or 6 dry, 3 or 4 moist  
Chroma—3 or 4  
Other characteristics—as much as 15 percent durinodes in the lower part in most pedons  

Bq and Bqk horizons:  
Value—5 to 7 dry, 4 or 5 moist  
Chroma—3 or 4  
Texture—loamy sand or sandy loam  
Content of rock fragments—20 to 60 percent, mainly pebbles  
Other characteristics—continuous, weak cementation; strata of noncemented material in some pedons  

Atlow Series  

Depth class: Shallow  
Drainage class: Well drained  
Parent material: Residuum derived from chert, argillite, shale, greenstone, and altered rhyolitic tuff
Positions on landscape: Summits and side slopes of mountains and hills
Slope: 8 to 50 percent
Mean annual precipitation: About 10 inches
Mean annual temperature: About 46 degrees F

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Xerolic Haplargids

Typical Pedon

About 40 percent of the surface is covered with pebbles and 10 percent with cobbles.

A—0 to 3 inches; pale brown (10 YR 6/3) very gravelly loam, dark brown (10 YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 25 percent pebbles and 10 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary.

Bt1—3 to 7 inches; brown (10 YR 5/3) very gravelly clay loam, dark yellowish brown (10 YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; common very fine interstitial pores; 25 percent pebbles and 10 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary.

Bt2—7 to 14 inches; yellowish brown (10 YR 5/4) very gravelly clay loam, dark yellowish brown (10 YR 4/4) moist; moderate fine angular blocky structure; hard, friable, very sticky and very plastic; common very fine and fine roots; common very fine interstitial pores and few very fine tubular pores; 30 percent pebbles and 15 percent cobbles; few thin lime coatings on the underside of coarse fragments; moderately alkaline (pH 8.0); abrupt irregular boundary.

R—14 inches: chert; thin lime coatings in rock fractures.

Typical Pedon Location

Soil name and map unit in which located: Atlow very gravelly loam, 15 to 50 percent slopes, in Atlow-Stingdorn association

Location in Nevada: Lander County, Nevada, North Part, survey area: about 30 miles southwest of Battle Mountain; about 1,200 feet east and 1,050 feet north of the southwest corner of sec. 31, T. 29 N., R. 43 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in June through October

Average annual soil temperature: 48 to 52 degrees F

Depth to bedrock: 14 to 20 inches

A horizon:
Value—6 or 7 dry, 3 to 5 moist
Chroma—2 or 3
Reaction—mildly alkaline or moderately alkaline

Bt horizon:
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 to 4
Texture—very gravelly clay loam or very cobbly clay loam
Content of clay—27 to 35 percent
Content of rock fragments—35 to 50 percent, dominantly pebbles and cobbles
Structure—angular blocky or subangular blocky
Reaction—moderately alkaline or strongly alkaline
Other characteristics—noncalcareous matrix, thin lime coatings on the underside of rock fragments

Attella Series

Depth class: Very shallow
Drainage class: Well drained

Parent material: Residuum and colluvium that are derived from dolostone, dolomite, and calcareous shale and include some loess

Positions on landscape: Side slopes of mountains
Slope: 30 to 50 percent
Mean annual precipitation: About 11 inches
Mean annual temperature: About 42 degrees F

Taxonomic class: Loamy-skeletal, mixed (calcareous), frigid Lithic Xeric Torriorthents

Typical Pedon

About 80 percent of the surface is covered with pebbles and 5 percent with flagstones.

A—0 to 3 inches; light brownish gray (10 YR 6/2) very gravelly loam, dark brown (10 YR 3/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine vesicular and interstitial pores; 45 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

C—3 to 7 inches; light brownish gray (10 YR 6/2) very gravelly loam, dark brown (10 YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and many medium roots; common very fine and fine tubular pores; 45 percent pebbles; common thin lime coatings on the underside of pebbles and few lime pendants;
strongly effervescent; moderately alkaline (pH 8.3);
abrupt wavy boundary.
2R—7 inches; hard, fractured dolostone.

Typical Pedon Location

*Soil name and map unit in which located:* Attella very
gravelly loam, 30 to 50 percent slopes, in Hymas-
Xine-Attella association

*Location in Nevada:* Lander County, Nevada, South
Part, survey area; about 12 miles north of Austin;
about 2,100 feet north and 2,000 feet east of the
southwest corner of sec. 26, T. 21 N., R. 44 E.

Range in Characteristics

*Soil moisture content:* Usually moist from mid-October to
mid-June, dry from mid-June to mid-October
*Average annual soil temperature:* 41 to 47 degrees F
*Depth to bedrock:* 6 to 10 inches
*Calcium carbonate equivalent:* 5 to 20 percent
*Reaction:* Mildly alkaline or moderately alkaline
*Content of organic carbon:* 1.0 to 2.5 percent when mixed

Control section:

*Content of clay:* 15 to 25 percent when mixed
*Texture:* very gravelly loam or very gravelly silt
loam
*Content of rock fragments:* 35 to 60 percent when mixed,
mainly pebbles and some channers

A horizon:

*Value:* 6 or 7 dry, 3 or 4 moist
*Chroma:* 2 or 3
*Structure:* weak or moderate, thin or medium, and
platy; or weak or moderate, fine or medium, and
granular
*Consistence:* friable or very friable (moist)

C horizon:

*Value:* 6 or 7 dry, 3 to 5 moist
*Chroma:* 2 to 4
*Structure:* fine or medium subangular blocky, or
massive
*Consistence:* soft or slightly hard (dry), friable or
very friable (moist)
*Effervescence:* strongly effervescent or violently
effervescent
*Other characteristics:* coatings of lime on the
underside of rock fragments, soft masses of lime in some pedons

Barrier Series

*Depth class:* Shallow to duripan
*Drainage class:* Well drained

*Parent material:* Mixed alluvium derived from volcanic
and sedimentary rock

*Positions on landscape:* Fan piedmont remnants
*Slope:* 4 to 15 percent
*Mean annual precipitation:* About 10 inches
*Mean annual temperature:* About 45 degrees F

Typical Pedon

About 15 percent of the surface is covered with pebbles
and 10 percent with cobbles and stones.

A1—0 to 2 inches; pale brown (10YR 6/3) cobbly loam,
dark brown (10YR 4/3) moist; moderate medium
platy structure; slightly hard, friable, slightly sticky
and slightly plastic; few fine roots; many medium
and fine vesicular pores; 10 percent cobbles and 15
percent cobbles; strongly effervescent; moderately
alkaline (pH 8.2); abrupt smooth boundary.

A2—2 to 4 inches; pale brown (10YR 6/3) loam, dark
brown (10YR 4/3) moist; moderate thick platy
structure; slightly hard, friable, slightly sticky and
slightly plastic; few fine roots; many fine vesicular
pores; 5 percent cobbles; strongly effervescent;
moderately alkaline (pH 8.4); abrupt smooth
boundary.

A3—4 to 7 inches; pale brown (10YR 6/3) loam, dark
brown (10YR 4/3) moist; moderate fine and very
fine subangular blocky structure; slightly hard,
friable, slightly sticky and slightly plastic; common
fine and very fine roots; common fine interstitial
pores; 5 percent cobbles; violently effervescent;
moderately alkaline (pH 8.4); clear wavy boundary.

Bqk—7 to 12 inches; very pale brown (10YR 7/3)
gravelly loam, brown (10YR 5/3) moist; massive;
slightly hard, friable, slightly sticky and slightly
plastic; common medium, fine, and very fine roots;
common fine and very fine interstitial pores; 15
percent durinodes; 30 percent cobbles and pebble-
sized pan fragments; violently effervescent;
moderately alkaline (pH 8.2); abrupt wavy boundary.

Bqkm—12 to 27 inches; light gray (10YR 7/2), cobbly,
strongly cemented duripan, pale brown (10YR 6/3)
moist; massive; very hard, very firm; common
medium and fine roots matted on top; very few very
fine interstitial pores; few thin discontinuous
indurated lamellae; violently effervescent; clear
smooth boundary.

Cqkm—27 to 60 inches; very pale brown (10YR 7/3),
stratified, strongly and weakly silica-cemented very
cobbly loamy sand, brown (10YR 5/3) moist;
massive; hard, firm, nonsticky and nonplastic;
common fine and very fine interstitial pores; 20
percent pebbles and 30 percent cobbles; strongly effervescent; moderately alkaline (pH 8.2).

**Typical Pedon Location**

*Soil name and map unit in which located:* Barrier cobble loam. 4 to 15 percent slopes, in Barrier-Kobe association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 32 miles southeast of Austin, in the Monitor Valley; about 1,300 feet north and 1,000 feet west of the southeast corner of sec. 18, T. 16 N., R. 48 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 45 to 47 degrees F

*Depth to the duripan:* 10 to 20 inches

*Content of clay in the control section:* 8 to 18 percent

*Texture of the fine-earth fraction:* Sandy loam, fine sandy loam, or loam

*Content of rock fragments:* 10 to 35 percent when mixed, mainly pebbles

*Reaction:* Moderately alkaline or strongly alkaline

*Effervescence:* Strongly effervescent or violently effervescent

*Other characteristics:* Continuous, weakly cemented or noncemented strata below the duripan in some pedons

*A horizon:*
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3

*Bqk horizon:*
- Value—7 or 8 dry, 5 to 7 moist
- Chroma—2 or 3

**Batan Series**

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Parent material:* Silty alluvium derived from various kinds of rock, mostly volcanic rock, that is high in content of loess and pyroclastic material

*Positions on landscape:* Alluvial flat remnants

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

*Taxonomic class:* Fine-silty, mixed (calcareaous), mesic Durorthic Torriorthents

**Typical Pedon**

A—0 to 5 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; strong very thin platy structure;

hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many fine vesicular pores and few very fine interstitial and tubular pores; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary.

C—5 to 9 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate very thin and thin and strong very thick platy structure; hard, very friable, slightly sticky and plastic; common very fine roots; many very fine interstitial and tubular pores; violently effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.

Cq—9 to 19 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; many very fine tubular pores; 30 percent hard, firm, brittle durinodes 5 to 15 millimeters in diameter; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary.

Cqk1—19 to 30 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; few fine faint iron mottles that are brown (7.5YR 5/4) and dark brown (7.5YR 4/4) moist; weak very thin platy structure; slightly hard, very friable, sticky and plastic; few very fine and fine roots; many very fine interstitial and tubular pores; 20 percent hard, firm, brittle durinodes 5 to 15 millimeters in diameter; fine white (10YR 8/2) filaments or threads of lime; violently effervescent; strongly alkaline (pH 8.8); gradual smooth boundary.

Cqk2—30 to 44 inches; light gray (2.5Y 7/2) silt loam, grayish brown (2.5Y 5/2) moist; common fine distinct iron mottles that are light brown (7.5YR 6/4) and dark yellowish brown (10YR 4/4) moist; strong medium platy structure parting to moderate very fine angular blocky; hard, friable, slightly sticky and plastic; few very fine, fine, and medium roots; common very fine tubular pores; 20 percent hard, firm, brittle durinodes 5 to 15 millimeters in diameter; fine white (10YR 8/2) filaments or threads of lime; violently effervescent; strongly alkaline (pH 8.6); gradual smooth boundary.

Cqk3—44 to 63 inches; light gray (2.5Y 7/2) silty clay loam, grayish brown (2.5Y 5/2) moist; many fine distinct iron mottles that are brown (7.5YR 4/4) and dark reddish brown (5YR 3/2), dark reddish gray (5YR 4/2) and dark reddish brown (2.5YR 2/4) moist; moderate very thin and thin platy structure parting to moderate very fine angular blocky; hard, friable, sticky and plastic; few very fine and fine roots; many very fine interstitial pores and few fine tubular pores; 20 percent hard, firm, brittle durinodes 5 to 15 millimeters in diameter; fine white
(10YR 8.1) filaments or threads of lime; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

C—63 to 68 inches: very pale brown (10YR 7/3) silt loam, dark grayish brown (2.5Y 4/2) moist; common fine faint iron mottles that are pinkish gray (7.5YR 6/2) moist and common fine distinct iron mottles that are brown (7.5YR 4/2) moist; massive; hard, friable, slightly sticky and plastic; few fine roots; many very fine interstitial and tubular pores; violently effervescent; strongly alkaline (pH 8.6).

**Typical Pedon Location**

*Map unit in which located: Batan silt loam*

*Location in Nevada: Lander County, Nevada, North Part, survey area; about 6.2 miles southeast of Battle Mountain; about 1,585 feet west and 1,585 feet north of the southeast corner of sec. 31, T. 32 N., R. 46 E.*

**Range in Characteristics**

*Soil moisture content: Moist in winter and spring, dry late in May to early in November*

*Depth to the water table: 60 inches or more*

*Average annual soil temperature: 47 to 53 degrees F*

*Depth to the Cq horizon: 9 to 24 inches*

*Content of salt and sodium: Affected by salt and sodium in most pedons; the upper part not affected in some pedons near drainageways and stream channels*

*Content of mottles: Common faint or distinct iron mottles below a depth of 10 inches*

*Depth to gypsum crystals (when present): More than 20 inches in some pedons*

*Other characteristics: Nonconformable, stratified, very gravelly sand and fine sand 2C horizon at a depth of more than 50 inches in some pedons*

*Control section:*

Content of clay—20 to 30 percent
Texture—dominantly silt loam or silty clay loam, but strata of fine sandy loam to silty clay in some pedons

*A horizon:*

Hue—2.5Y or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Structure—platy or massive
Consistence—slightly hard or hard, slightly sticky or sticky, and slightly plastic or plastic
Reaction—moderately alkaline to very strongly alkaline
Effervescence—slightly effervescent to violently effervescent

**C horizon:**

Hue—2.5Y or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Structure—platy, angular blocky, prismatic, or massive
Reaction—strongly alkaline or very strongly alkaline
Effervescence—strongly effervescent or violently effervescent

*Cq and Cqk horizons:*

Hue—2.5Y or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Other characteristics—dominantly 20 to 40 percent durinodes, but strata that are as much as 70 percent discontinuous, weakly silica-cemented durinodes present in some pedons

**Belate Series**

*Depth class: Very deep*

*Drainage class: Well drained*

*Parent material: Colluvium and residuum derived from rhyolite tuff and andesite*

*Positions on landscape: Convex side slopes of mountains*

*Slope: 15 to 50 percent*

*Mean annual precipitation: About 13 inches*

*Mean annual temperature: About 43 degrees F*

*Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Argixerolus*

**Typical Pedon**

About 65 percent of the surface is covered with pebbles and 15 percent with cobbles and stones.

A1—0 to 4 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; common very fine vesicular pores; 40 percent pebbles and 5 percent cobbles; neutral (pH 7.2); clear smooth boundary.

A2—4 to 14 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots; many very fine and few medium tubular pores; 30 percent pebbles; mildly alkaline (pH 7.4); clear wavy boundary.

Bt1—14 to 19 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate
medium angular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores; few thin clay films on peds; 35 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.4); gradual wavy boundary.

Bt2—19 to 47 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; common moderately thick and many thin clay films on peds; 35 percent pebbles and 15 percent cobbles; mildly alkaline (pH 7.8); gradual smooth boundary.

Bt3—47 to 60 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong fine angular blocky structure; hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; few moderately thick and common thin clay films on faces of peds; 40 percent pebbles and 15 percent cobbles; matrix is non-effervescent; few thin lime coatings on the underside of rock fragments; mildly alkaline (pH 7.8).

Typical Pedon Location

Soil name and map unit in which located: Belate very gravelly loam, 15 to 30 percent slopes, in Belate-Softscrabble-Torro association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 32 miles west of Austin; in an unsectionalized area about 1,000 feet west and 700 feet north of the southeast corner of the assumed sec. 15, T. 17 N., R. 38 E.

Range in Characteristics

Soil moisture content: Moist to a depth of about 15 to 20 inches in winter and spring in most years, dry in mid-July through October

Average annual soil temperature: 43 to 47 degrees F

Thickness of the mollic epipedon: 10 to 20 inches

(includes the upper part of the argillic horizon)

Thickness of the solum and depth to bedrock: 60 to 80 inches

Reaction: Neutral or mildly alkaline

Control section:

Content of clay—18 to 30 percent

Content of rock fragments—35 to 50 percent, mainly pebbles

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Structure—weak or moderate, fine or medium, and subangular blocky; or weak or moderate, thin or medium, and platy

Bt horizon:

Value—5 or 6 dry, 2 to 4 moist

Chroma—3 or 4

Texture—very gravelly loam or very gravelly clay loam

Content of clay—18 to 30 percent

Content of rock fragments—35 to 60 percent, mainly pebbles

Structure—dominantly fine and medium subangular blocky or angular blocky, but Bt3 horizon massive in some pedons

Belted Series

Depth class: Very shallow or shallow to duripan

Drainage class: Well drained

Parent material: Mixed alluvium

Positions on landscape: Fan piedmont remnants

Slope: 2 to 8 percent

Mean annual precipitation: About 7 inches

Mean annual temperature: 53 degrees F

Taxonomic class: Loamy, mixed, mesic, shallow Haplic Durargids

Typical Pedon

About 30 percent of the surface is covered with pebbles.

A—0 to 4 inches; light gray (10YR 7/2) gravelly fine sandy loam, grayish brown (10YR 5/2) moist; moderate medium platy structure; hard, friable, nonsticky and nonplastic; few very fine roots; many very fine and fine and common medium vesicular pores; 25 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

Bt—4 to 11 inches; very pale brown (10YR 7/3) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate fine and medium granular structure; hard, friable, sticky and plastic; common very fine and fine roots; many very fine tubular pores; common thin clay films on faces of peds; 25 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

Btk—11 to 14 inches; very pale brown (10YR 7/3) gravelly loam, yellowish brown (10YR 5/4) moist; moderate fine and medium granular structure; hard, friable, sticky and plastic; few very fine roots; many very fine tubular and interstitial pores; common medium soft lime masses; 25 percent pebbles; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bqkm—14 to 25 inches; white (10YR 8/2), strongly silica-cemented duripan with discontinuous laminar
cap about 0.5 to 1.0 millimeter thick; light yellowish brown (10YR 6/4) moist; massive; very hard, very firm; few very fine roots; few very fine tubular pores; common medium soft lime masses; violently effervescent; 0.5- to 2.0-inch-thick, discontinuous layer of pale brown (10YR 6/3) very gravelly loamy fine sand, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary.

2Cqk—25 to 60 inches; alternating layers of very pale brown (10YR 7/3) very gravelly sand and discontinuous, strongly cemented duripan; pale brown (10YR 6/3) moist; layers of very gravelly sand are single grain and loose, nonsticky and nonplastic; duripan layers are massive and very hard, very firm, nonsticky and nonplastic; few very fine roots; many fine interstitial pores; 60 percent pebbles; violently effervescent; strongly alkaline (pH 9.0).

**Typical Pedon Location**

*Soil name and map unit in which located:* Belted gravelly fine sandy loam, 2 to 8 percent slopes, in Unsel-Wardenot-Belted association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 25 miles south of Austin; about 1,900 feet south and 400 feet east of the northwest corner of sec. 26, T. 16 N., R. 45 E.

**Range in Characteristics**

*Soil moisture content:* Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively in July through October as a result of convection storms

*Average annual soil temperature:* 53 to 59 degrees F

*Depth to the duripan:* 8 to 14 inches

*Depth to the 2C horizon:* 24 to 61 inches

*Reaction:* Moderately alkaline to very strongly alkaline

*Control section:*

  Content of clay—averages 15 to 28 percent

  Content of rock fragments—averages 0 to 25 percent

*A horizon:*

  Value—5 to 7 dry, 4 or 5 moist

  Chroma—2 or 3

  Structure—platy, subangular blocky, or granular

  Effervescence—slightly effervescent or strongly effervescent

*Bt horizon:*

  Hue—7.5YR or 10YR

  Value—5 to 7 dry, 4 or 5 moist

  Chroma—2 to 4

Structure—subangular blocky, platy, or granular

Texture—sandy clay loam, sandy loam, loam, or clay loam

Content of clay—18 to 30 percent

Content of rock fragments—0 to 30 percent

Effervescence—slightly effervescent or strongly effervescent

**Bqkm horizon:**

Structure—platy or massive

Other characteristics—strongly cemented, continuous laminae that generally are more than 0.5 inch thick

**2C horizon:**

  Hue—10YR or 7.5YR

  Value—6 or 7 dry, 4 to 6 moist

  Chroma—2 to 4 dry or moist

Texture—variable (lake sediment)

Effervescence—noneffervescent to violently effervescent

**Beoska Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Loess over loamy and gravelly alluvium derived from various kinds of rock

*Positions on landscape:* Fan piedmonts, fan piedmont remnants

*Slope:* 0 to 8 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

*Taxonomic class:* Fine-loamy, mixed, mesic Duric Natargids

**Typical Pedon**

*A1—*0 to 5 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate very thin and thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and few fine roots; many fine vesicular and very fine tubular pores; 20 percent pebbles on the surface; moderately alkaline (pH 8.0); clear wavy boundary.

*A2—*5 to 9 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium and coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; common very fine tubular pores; less than 2 percent pebbles; moderately alkaline (pH 8.2); clear wavy boundary.

*AB—*9 to 13 inches; mottled, very pale brown (10YR 7/2 and 7/3) silt loam, brown (10YR 4/3) moist; weak
coarse prismatic structure; hard, friable, slightly sticky and plastic; few very fine roots and very few fine roots; many very fine tubular pores; less than 2 percent pebbles; strongly alkaline (pH 8.6); abrupt wavy boundary.

Btk—13 to 18 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 3/3) moist; weak medium and coarse prismatic structure parting to moderate very fine and fine angular blocky; hard, very friable, sticky and very plastic; many very fine and fine roots; common very fine tubular pores; many thin clay films on pedds and lining pores; 5 percent rounded pebbles 2 to 15 millimeters in diameter; slightly effervescent; strongly alkaline (pH 8.6); clear irregular boundary.

Btck—18 to 24 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium and coarse prismatic structure parting to moderate very fine and fine angular blocky; hard, friable, slightly sticky and plastic; many very fine and fine roots; common very fine tubular pores; many thin clay films on pedds and in pores; common fine filaments and threads of lime and coatings of lime on pebbles; 5 percent rounded pebbles 2 to 15 millimeters in diameter; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

2Bqk1—24 to 55 inches; light gray (10YR 7/2) very gravelly very fine sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine roots; common very fine tubular pores; common fine filaments of lime; 25 percent weak and moderate durinodes 5 to 15 millimeters in diameter; 40 percent rounded pebbles 2 to 15 millimeters in diameter; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

2Bqk2—55 to 62 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine roots; common very fine tubular pores; common fine filaments of lime; 25 percent weak and moderate durinodes 5 to 15 millimeters in diameter; 40 percent rounded pebbles 2 to 15 millimeters in diameter; violently effervescent; moderately alkaline.

Typical Pedon Location

Map unit in which located: Beoska silt loam, 0 to 2 percent slopes

Location in Nevada: Lander County, Nevada, North Part, survey area; about 50 miles southwest of Battle Mountain; about 2,200 feet east and 1,200 feet north of the southeast corner of sec. 26, T. 25 N., R. 42 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry from late in May through November
Average annual soil temperature: 47 to 52 degrees F
Depth to the 2Bqk horizon: 16 to 26 inches

A horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry
Chroma—2 or 3
Structure—platy, prismatic, or massive

Btk horizon:
Value—3 or 4 moist, 6 or 7 dry
Chroma—3 or 4
Texture—silty clay loam, silt loam, or clay loam
Content of clay—25 to 35 percent
Content of rock fragments—as much as 15 percent, mainly pebbles
Reaction—moderately alkaline or strongly alkaline
Other characteristics—lime in some pedons

Bqk horizon:
Value—7 or 8 dry, 4 to 6 moist
Texture—stratified very fine sandy loam, fine sandy loam, and sandy loam
Content of clay—5 to 15 percent
Content of rock fragments—15 to 35 percent to a depth of 40 inches and 15 to 65 percent below this depth, mainly pebbles
Consistence—soft to hard (dry), very friable to firm (moist)
Reaction—moderately alkaline or strongly alkaline
Other characteristics—20 to 40 percent durinodes in a friable matrix, or weak or strong, discontinuous, silica cementation

Blackhawk Series

Depth class: Shallow to duripan
Drainage class: Well drained
Parent material: Loess, mixed alluvium
Positions on landscape: Fan piedmont remnants
Slope: 2 to 15 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 47 degrees F
Taxonomic class: Loamy, mixed, mesic, shallow Entic Durorthids

Typical Pedon

A—0 to 8 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots and few medium roots; many fine tubular
pores; 3 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary.

Bw—8 to 14 inches; very pale brown (10YR 7/3) loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine roots; many fine tubular pores; 3 percent pebbles; slightly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary.

Bqkm—14 to 17 inches; brown (10YR 5/3), strongly silica-cemented duripan, dark brown (10YR 4/3) moist; massive; extremely hard, extremely firm; few fine roots matted on top; common fine soft lime filaments; violently effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary.

Bk1—17 to 38 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few fine tubular pores; 5 percent pebbles; few fine soft lime filaments; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

2Bk2—38 to 47 inches; very pale brown (10YR 7/3) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, nonsticky and nonplastic; few fine roots; few fine tubular pores; 40 percent pebbles; common medium soft lime masses; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

3Bk3—47 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable; few fine roots; few fine tubular pores; 70 percent pebbles; common fine soft lime masses; slightly effervescent; moderately alkaline (pH 8.0).

Typical Pedon Location

Soil name and map unit in which located: Blackhawk very fine sandy loam, 0 to 4 percent slopes, in Golconda-Blackhawk association

Location in Nevada: Lander County, Nevada, North Part, survey area: about 8 miles north of Battle Mountain; about 1,500 feet north and 500 feet east of the southwest corner of sec. 26, T. 33 N., R. 45 E.

Range in Characteristics

Soil moisture content: Moist in winter and early in spring, dry late in May through November

Average annual soil temperature: 47 to 54 degrees F

Depth to the duripan: 14 to 20 inches

Control section:
Content of clay—averages 5 to 10 percent
Content of rock fragments—as much as 30 percent, mainly pebbles

Content of silt and very fine sand—65 to 80 percent

A horizon:
-Hue—10YR 2.5Y
-Value—6 or 7 dry, 3 to 5 moist
-Chroma—2 or 3
-Structure—weak or moderate, very thin to thick, and platy, or massive
-Reaction—mildly alkaline to strongly alkaline

Bw horizon:
-Hue—10YR 2.5Y
-Value—6 or 7 dry, 4 or 5 moist
-Chroma—2 or 3
-Texture—silt loam, loam, or very fine sandy loam
-Content of clay—averages 5 to 10 percent
-Content of rock fragments—0 to 30 percent, mainly pebbles
-Structure—weak or moderate, thin to thick, and platy; weak or moderate, fine to coarse, and subangular blocky; or massive
-Reaction—mildly alkaline to strongly alkaline

Bq, Bk, and C horizons (when present):
-Hue—10YR 2.5Y
-Value—5 to 7 dry, 4 to 6 moist
-Chroma—2 or 3
-Structure—weak to strong, thin or thick, and platy, or massive

Bqkm horizon:
-Consistence—very hard or extremely hard
-Reaction—moderately alkaline to very strongly alkaline
-Other characteristics—two or more strongly cemented layers interbedded with weakly silica-cemented material or strata that have a friable matrix and durinodes

Bk and Bqk horizons (when present):
-Texture—stratified loam, gravelly coarse sandy loam, or gravelly coarse sand

2Bqk, 2Bk, and 2C horizons (when present):
-Texture—dominantly unconformable strata of very gravelly or extremely gravelly sand, coarse sand, loamy coarse sand, and sandy loam below a depth of 30 inches, but strata of clay in some pedons

Broyles Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Thin mantle of loess over mixed loamy alluvium
Positions on landscape: Fan skirts, inset fan remnants, fan aprons
Slope: 0 to 8 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 48 degrees F
Taxonomic class: Coarse-loamy, mixed, mesic Duric Camborthids

Typical Pedon
A—0 to 5 inches; light brownish gray (2.5YR 6/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; weak very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and common medium oblique roots; many very fine vesicular and interstitial pores and few fine tubular pores; moderately alkaline (pH 8.4); abrupt wavy boundary.
Bw—5 to 11 inches; light gray (10YR 7/2) very fine sandy loam, brown (10YR 4/3) moist; yellowish brown (10YR 5/4) stains on faces of peds; weak and moderate medium and thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular, interstitial, and tubular pores; strongly alkaline (pH 8.6); abrupt wavy boundary.
Bk—11 to 15 inches; light gray (10YR 7/2) sandy loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots and very fine medium oblique roots; many very fine vesicular, interstitial, and tubular pores; about 1 percent hard, firm, brittle durinodes 15 to 30 millimeters in diameter; very slightly effervescent in matrix and strongly effervescent in spots; very strongly alkaline (pH 9.2); abrupt wavy boundary.
Bqk—15 to 19 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular, interstitial, and tubular pores; about 25 percent hard, firm, brittle durinodes 10 to 25 millimeters in diameter; common fine lime filaments and threads; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.
Bqky1—19 to 28 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; very few very fine roots; common very fine vesicular, interstitial, and tubular pores; about 30 percent hard, firm, brittle durinodes 15 to 30 millimeters in diameter; few fine gypsum filaments, threads, and seams as much as 3 inches wide; slightly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary.
Bqky2—28 to 44 inches; pale brown (10YR 6/3) loamy sand, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; very few very fine roots; common very fine vesicular, interstitial, and tubular pores; about 20 percent hard, firm, brittle durinodes 20 to 35 millimeters in diameter; common fine gypsum filaments, threads, and seams as much as 3 inches wide; strongly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary.
Cq—44 to 60 inches; very pale brown (10YR 7/3) loamy fine sand, brown (10YR 4/3) moist; massive; hard, firm, nonsticky and nonplastic; nonbrittle when wet; common very fine tubular pores; silica cementation bridging sand grains; strongly alkaline (pH 8.8).

Typical Pedon Location
Map unit in which located: Broyles very fine sandy loam, 0 to 2 percent slopes
Location in Nevada: Lander County, Nevada, North Part, survey area; about 21 miles south of Battle Mountain; about 3,420 feet east and 700 feet north of the southwest corner of sec. 30, T. 32 N., R. 45 E.

Range in Characteristics
Soil moisture content: Moist in winter and spring, dry late in May through November
Average annual soil temperature: 47 to 55 degrees F
Depth to the Bk or Bqk horizon: 10 to 24 inches
Other characteristics: Strongly cemented duripan below a depth of 40 inches in some pedons

Control section:
Content of clay—5 to 15 percent
Texture—stratified fine sandy loam, very fine sandy loam, or silt loam in the upper part; loam, fine sandy loam, sandy loam, or loamy sand in the lower part
Content of rock fragments—0 to 35 percent pebbles, increasing with increasing depth
A horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Structure—weak or moderate, thin to thick, and platy, or massive
Reaction—moderately alkaline or strongly alkaline
Other characteristics—commonly noneffervescent, but effervescent in some pedons because of recharge from dust

Bw horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—mainly 2 or 3, but 4 on faces of some peds
Structure—thin or medium and platy, fine to coarse and subangular blocky or prismatic, or massive
Reaction—moderately alkaline or strongly alkaline

Bqk or 2Bqk horizon (when present):
Reaction—strongly alkaline or very strongly alkaline
Other characteristics—20 to 75 percent durinodes; very weak silica cementation surrounding durinodes in matrix in some pedons; few or common fine gypsum filaments or seams in the lower part of some pedons

C horizon:
Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—1 to 4
Reaction—strongly alkaline or very strongly alkaline

Bubus Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Alluvium derived from various kinds of rock, mostly volcanic rock that is high in pyroclastic material
Positions on landscape: Alluvial flat remnants, lake-plain terraces
Slope: 0 to 4 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 49 degrees F
Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Durothidic Torriorthents

Typical Pedon
A—0 to 6 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and nonplastic; many fine vesicular and very fine interstitial pores; 10 percent fine pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

C1—6 to 10 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak very thin and thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and common fine and medium roots; few very fine interstitial pores and common very fine tubular pores; 5 percent fine pebbles; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

C2—10 to 15 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; moderate very thin and thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and few fine and medium roots; common very fine interstitial and tubular pores; 5 percent fine pebbles; violently effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

Cqk1—15 to 29 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; few fine faint iron mottles that are brown (7.5YR 5/4 and 4/4) moist; massive; slightly hard and hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine tubular pores; 3 percent fine pebbles; 35 percent hard, firm and very firm, brittle durinodes 2 to 35 millimeters in diameter; fine filaments or threads of gypsum; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

Cqk2—29 to 60 inches; very pale brown (10YR 7/4) very fine sandy loam, yellowish brown (10YR 5/4) moist; few fine distinct iron mottles that are yellowish brown (10YR 5/6) moist and few fine faint mottles that are dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; 3 percent fine pebbles; 35 percent hard, firm, brittle durinodes 2 to 30 millimeters in diameter; fine filaments or threads of gypsum; violently effervescent; moderately alkaline (pH 8.4).

Typical Pedon Location

Map unit in which located: Bubus very fine sandy loam
Location in Nevada: Lander County, Nevada, North Part, survey area; about 1.6 miles southeast of Battle Mountain; about 2,100 feet south and 1,750 feet east of the northwest corner of sec. 28, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry late in May through November
Average annual soil temperature: 47 to 53 degrees F
Content of clay in the control section: 10 to 15 percent
Content of rock fragments: 0 to 5 percent pebbles
Content of salt and sodium: Commonly strongly affected by salt and sodium throughout, but moderately or slightly affected in the upper part in some pedons
Other characteristics: Faint or distinct iron mottles and segregated gypsum common below a depth of 10 inches; stratified sand and gravel at a depth of more than 40 inches in some pedons

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Structure—platy or massive
Consistence—nonsticky or slightly sticky, nonplastic or slightly plastic
Reaction—moderately alkaline to very strongly alkaline
Effervescence—slightly effervescent to violently effervescent

C horizon:
Value—6 or 7 dry, 4 to 6 moist
Chroma—2 to 4
Texture—dominantly very fine sandy loam, but stratified loam, silt loam, very fine sandy loam, fine sandy loam, or sandy loam in some pedons
Structure—platy or massive
Reaction—moderately alkaline to very strongly alkaline, commonly decreasing in alkalinity with increasing depth
Effervescence—strongly effervescent or violently effervescent

Cqk horizon (when present):
Reaction—moderately alkaline to very strongly alkaline
Content of durinodes—20 to 70 percent

Bucan Series

Depth class: Deep
Drainage class: Well drained
Parent material: Loess that is high in content of volcanic ash over residuum and colluvium derived from extrusive volcanic rock
Positions on landscape: Side slopes of mountains
Slope: 30 to 50 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 44 degrees F
Taxonomic class: Fine, montmorillonitic, frigid Xerolic Haplargids

Typical Pedon

About 20 percent of the surface is covered with pebbles and 35 percent with cobbles and stones.

A—0 to 4 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, sticky and slightly plastic; few very fine and fine roots; few fine vesicular pores; 30 percent pebbles, 15 percent cobbles, and 10 percent stones; neutral (pH 7.3); clear smooth boundary.

Bt1—4 to 10 inches; pale brown (10YR 6/3) clay, brown (10YR 4/3) moist; moderate medium subangular blocky structure; very hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine tubular pores; 10 percent pebbles; common moderately thick clay films on faces of peds and lining pores and few thick clay films on faces of peds; mildly alkaline (pH 7.8); abrupt wavy boundary.

Bt2—10 to 18 inches; light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; very hard, firm, very sticky and very plastic; common fine roots; common fine tubular pores; 10 percent pebbles; common moderately thick clay films on faces of peds and lining pores and few thick clay films on faces of peds; mildly alkaline (pH 7.8); abrupt wavy boundary.

2Btk1—18 to 36 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, firm, very sticky and very plastic; few fine roots; few fine tubular pores; 20 percent pebbles and 5 percent cobbles; common moderately thick clay films on faces of peds and lining pores; thin lime coatings on the underside of rock fragments; mildly alkaline (pH 7.8); gradual wavy boundary.

2Btk2—36 to 52 inches; light reddish brown (10YR 6/4) gravelly clay loam, reddish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few fine and medium roots; few fine tubular pores; 20 percent pebbles and 10 percent cobbles; few moderately thick clay films on faces of peds; thin lime coatings on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.2); gradual irregular boundary.

R—52 inches; basalt.

Typical Pedon Location

Soil name and map unit in which located: Bucan very cobbly loam, 30 to 50 percent slopes, in Walti-Softscarble-Bucan association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 26 miles east of Austin; about 600 feet north of the southwest corner of sec. 12, T. 20 N., R. 47 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in some part late in October to early in June
Average annual soil temperature: 45 to 47 degrees F
Thickness of the solon and depth to bedrock: 40 to 60 inches
Other characteristics: The epipedon is less than one-third as thick as the solum

Control section:
Content of clay—45 to 60 percent
Content of rock fragments—as much as 15 percent when mixed
Depth to segregated lime—15 to 30 inches
A horizon:
- Value—5 or 6 dry (value of 6 occurs when the upper 7 inches are mixed), 3 or 4 moist
- Chroma—2 or 3
- Structure—weak or moderate, very thin to medium, and platy; weak or moderate, fine or medium, and granular or subangular blocky; or massive
- Consistency—soft or slightly hard (dry)

Bt horizon:
- Value—4 to 6 dry, 3 to 5 moist
- Chroma—2 to 4
- Content of clay—45 to 60 percent
- Content of rock fragments—as much as 15 percent
- Structure—weak to strong, fine or medium, and subangular or angular blocky in the upper part; moderate or strong, fine or medium, and prismatic in the lower part
- Reaction—neutral or mildly alkaline

2Btk horizon:
- Value—4 to 6 dry, 4 or 5 moist
- Chroma—3 to 6
- Texture—gravelly clay loam, gravelly clay, or cobbly clay
- Content of clay—35 to 45 percent
- Content of rock fragments—15 to 35 percent, mainly pebbles (cobbles common in the lower part in some pedons)
- Structure—medium and fine angular blocky or prismatic, or massive
- Reaction—mildly alkaline to strongly alkaline

Buffaran Series

Depth class: Shallow to duripan
Drainage class: Well drained
Parent material: Alluvium derived from various kinds of rock
Positions on landscape: Fan piedmonts, mountain valley fans, ballenas
Slope: 2 to 30 percent
Mean annual precipitation: About 10 inches
Mean annual temperature: About 46 degrees F

Taxonomic class: Clayey, montmorillonitic, mesic, shallow Xerolic Durargids

Typical Pedon
- About 15 percent of the surface is covered with pebbles.
- A—0 to 5 inches; light brownish gray (10YR 6/2) gravelly loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots and common fine and medium roots; common fine and very fine and few medium vesicular and tubular pores; 15 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary.
- Bt1—5 to 13 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 3/4) moist; strong medium prismatic structure; hard, firm, very sticky and very plastic; common fine exped roots and few medium roots; few very fine and fine tubular pores; 10 percent pebbles; continuous moderately thick clay films on faces of pedds and plugging pores; mildly alkaline (pH 7.8); clear smooth boundary.
- Bt2—13 to 16 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 3/6) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; common fine exped roots and few very fine, fine, and medium roots; few very fine, fine, and medium tubular pores; 20 percent pebbles; many thick clay films on faces of pedds and lining pores; mildly alkaline (pH 7.8); clear wavy boundary.
- Bqkm1—16 to 20 inches; strongly cemented duripan that has a 0.5-inch-thick, indurated, laminar cap; massive; extremely hard, extremely firm; 30 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.
- Bqkm2—20 inches; indurated duripan; massive; extremely hard, extremely firm; strongly effervescent.

Typical Pedon Location

Soil name and map unit in which located: Buffaran gravelly loam, 2 to 8 percent slopes, in Buffaran-Spasprey-Allor association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 21 miles west of Austin; about 500 feet north and 2,150 feet east of the southwest corner of sec. 8, T. 19 N., R. 40 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry early in June through October
Average annual soil temperature: 47 to 52 degrees F
Depth to the duripan: 14 to 20 inches

A horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry (value of more than 5.5 occurs when the upper 7 inches is mixed), 3 or 4 moist
- Chroma—2 or 3
- Structure—subangular blocky or platy

Bt horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2, 3, 4, or 6
Texture—clay or clay loam
Content of clay—35 to 50 percent
Content of rock fragments—10 to 30 percent, mostly gravel
Reaction—neutral or mildly alkaline

Bq horizon (when present):
Texture—loam or clay loam
Reaction—neutral to moderately alkaline
Effervescence—non-effervescence to strongly effervescence
Other characteristics—20 to 40 percent strongly cemented duripan fragments

Burrita Series

Depth class: Shallow
Drainage class: Well drained
Parent material: Residuum derived from interbedded chert, quartzite, sandstone, shale, and greenstone
Positions on landscape: Crests of hills, side slopes of mountains
Slope: 4 to 50 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 48 degrees F

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Lithic Xerolic Hapludands

Typical Pedon

A—0 to 3 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many fine and common medium vesicular pores; 20 percent pebbles and 25 percent cobbles; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bt1—3 to 6 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine and few medium tubular pores; 20 percent pebbles; common thin and few moderately thick clay films on faces of peds and lining pores; moderately alkaline (pH 8.0); clear smooth boundary.

Bt2—6 to 13 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, firm, sticky and plastic; common fine roots and few fine and medium roots; common fine and few medium tubular pores; 30 percent pebbles and 5 percent cobbles; common moderately thick clay films on faces of peds and lining pores; moderately alkaline (pH 8.2); clear wavy boundary.

Bt3—13 to 18 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, friable, very sticky and very plastic; few fine and medium roots; few fine and medium tubular pores; 30 percent pebbles and 20 percent cobbles; common moderately thick clay films on faces of peds and lining pores; moderately alkaline (pH 8.2); abrupt smooth boundary.

R—18 inches; quartzite.

Typical Pedon Location

Soil name and map unit in which located: Burrita very cobbly loam, 4 to 15 percent slopes, in Trunk-Burrita-Rock outcrop association
Location in Nevada: Lander County, Nevada, North Part, survey area; about 22 miles south of Battle Mountain; in an unsectionalized area about 2,400 feet south and 2,600 feet west of the northeast corner of the assumed sec. 28, T. 28 N., R. 44 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in July through October
Average annual soil temperature: 47 to 50 degrees F
Combined thickness of the A and Bt horizons and depth to bedrock: 14 to 20 inches

Control section:
Content of clay—35 to 50 percent
Content of rock fragments—35 to 60 percent when mixed, mainly pebbles, cobbles, and stones
Reaction—moderately alkaline or strongly alkaline

A horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4
Consistence—soft or slightly hard

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 to 6
Texture—very gravelly clay, very cobbly clay, very stony clay, very gravelly clay loam, very cobbly clay loam, or very stony clay loam
Structure—subangular blocky, angular blocky, or massive

Caniwe Series

Depth class: Very deep
**Drainage class:** Well drained  
**Parent material:** Loess and alluvium derived from various kinds of rock  
**Positions on landscape:** Inset fans within mountain valley fans  
**Slope:** 2 to 4 percent  
**Mean annual precipitation:** About 11 inches  
**Mean annual temperature:** About 48 degrees F  
**Taxonomic class:** Fine-silty, mixed, mesic Aridic Duric Haploxeolors  

**Typical Pedon**

A1—0 to 4 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; common very fine tubular pores; neutral (pH 7.0); abrupt smooth boundary.

A2—4 to 9 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate thin platy; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium roots; common very fine tubular pores; neutral (pH 7.3); clear smooth boundary.

A3—9 to 17 inches; grayish brown (10YR 5/2) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; common very fine tubular pores; neutral (pH 7.2); gradual wavy boundary.

2Cq1—17 to 29 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, very friable, very sticky and very plastic; few very fine roots; common very fine tubular pores; 40 percent weakly cemented durinodes 5 to 15 millimeters in diameter; mildly alkaline (pH 7.4); gradual wavy boundary.

2Cq2—29 to 40 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, very friable, sticky and plastic; few very fine roots; common very fine tubular pores; 55 percent weakly cemented durinodes 5 to 15 millimeters in diameter; mildly alkaline (pH 7.6); clear wavy boundary.

3Ck—40 to 60 inches; very pale brown (10YR 7/3) silt loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, sticky and plastic; very few very fine roots; few very fine tubular pores; common strongly effervescent fine lime seams and filaments; noneffervescent in matrix; moderately alkaline (pH 8.0).

**Typical Pedon Location**

**Soil name and map unit in which located:** Caniwe silt loam, 2 to 8 percent slopes, in Handy-Caniwe-Zoesta association  
**Location in Nevada:** Lander County, Nevada, North Part, survey area; about 35 miles south of Battle Mountain; about 600 feet north and 1,200 feet east of the southwest corner of sec. 8, T. 25 N., R. 46 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and spring, dry late in June to early in October  
**Average annual soil temperature:** 47 to 52 degrees F  
**Thickness of the mollic epipedon:** 10 to 19 inches  
**Depth to the Cq horizon:** 14 to 26 inches  
**Depth to carbonates:** 30 to 46 inches  

**Control section:**  
Content of clay—20 to 35 percent  
Content of rock fragments—less than 5 percent  
Texture—dominantly stratified silt loam or silty clay loam, but thin strata of clay loam or loam common in some pedons  

A horizon:  
Value—4 or 5 dry, 2 or 3 moist  
Chroma—2 or 3  

Cq horizon:  
Value—3 or 4 moist  
Chroma—2 to 4  
Reaction—mildly alkaline or moderately alkaline  
Other characteristics—25 to 60 percent weakly silica-cemented durinodes in a very friable or friable matrix

**Caphor Series**

**Depth class:** Very deep  
**Drainage class:** Well drained  
**Parent material:** Mixed alluvium  
**Positions on landscape:** Fan skirts  
**Slope:** 0 to 4 percent  
**Mean annual precipitation:** About 6 inches  
**Mean annual temperature:** About 49 degrees F  
**Taxonomic class:** Coarse-loamy, mixed (calcareous), mesic Durothridic Torriorthents  

**Typical Pedon**

A1—0 to 3 inches; light brownish gray (10YR 6/2) fine sandy loam, brown (10YR 5/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; very few fine roots; common very fine and few fine and medium vesicular pores;
strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

A2—3 to 7 inches: pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; very few very fine, fine, and medium roots; common fine and very few very fine and medium vesicular pores; 5 percent pebbles; common fine lime coatings on the underside of pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Bk—7 to 17 inches: pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; few fine and medium tubular pores; 5 percent pebbles; 10 percent weakly cemented durinodes; few fine lime filaments or threads and common medium lime and silica coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

Bqk—17 to 35 inches: pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; 55 percent light gray (10YR 7/2), discontinuous, thick lenses that are very hard, very firm, and strongly silica-cemented; massive; slightly hard, friable, slightly sticky and nonplastic; 5 percent pebbles; common medium lime and silica coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

2Ck—35 to 60 inches; pale brown (10YR 6/3) gravelly coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; 30 percent pebbles; common thin lime and silica coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6).

Typical Pedon Location

Soil name and map unit in which located: Caphor fine sandy loam, 0 to 2 percent slopes, in Caphor association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 15 miles southeast of Austin, in the northern part of the Big Smoky Valley; about 2,000 feet south and 1,300 feet west of the northeast corner of sec. 14, T. 17 N., R. 45 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist for short periods in November through May

Average annual soil temperature: 47 to 52 degrees F

Depth to Bqk horizon: 15 to 30 inches

Depth to 2Ck horizon: 24 to 39 inches

Control section:

Texture—fine sandy loam or sandy loam
Content of clay—8 to 18 percent
Content of rock fragments—less than 15 percent when mixed, mainly pebbles
Reaction—moderately alkaline or strongly alkaline, increasing in alkalinity with increasing depth

A horizon:

Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

Bk horizon:

Value—6 or 7 dry, 4 to 6 moist
Chroma—3 or 4

Bqk horizon:

Value—6 or 7 dry, 4 to 6 moist
Chroma—2 to 4

Other characteristics—20 to 60 percent discontinuous strong silica cementation in a friable matrix

2C horizon:

Value—6 or 7 dry, 4 to 6 moist
Chroma—3 or 4

Texture—stratified loamy sand or coarse sand
Content of pebbles—25 to 50 percent

Chad Series

Depth class: Deep
Drainage class: Well drained
Parent material: Residuum derived from chert and shale

Positions on landscape: Side slopes of mountains

Slope: 15 to 50 percent

Mean annual precipitation: About 14 inches

Mean annual temperature: About 44 degrees F

Taxonomic class: Fine, mixed, frigid Aridic Argixerolls

Typical Pedon

About 10 percent of the surface is covered with pebbles and 20 percent with cobbles.

A1—0 to 4 inches: grayish brown (10YR 5/2) cobble loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and plastic; common very fine and fine roots; many very fine interstitial pores and few fine tubular pores; 10 percent pebbles and 20 percent cobbles; neutral (pH 7.0); clear wavy boundary.

A2—4 to 11 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine and fine roots and
few medium roots; common very fine tubular and interstitial pores; 5 percent pebbles; neutral (pH 7.2); clear smooth boundary.

**BA**—11 to 14 inches; brown (10YR 5/3) clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate fine angular blocky; hard, firm, sticky and plastic; few fine Expored roots; common very fine and few fine tubular pores; 10 percent pebbles; few thin clay films on faces of ped; mildly alkaline (pH 7.4); abrupt smooth boundary.

**Bt**—14 to 28 inches; dark yellowish brown (10YR 4/4) clay, dark yellowish brown (10YR 3/4) moist; strong medium prismatic structure parting to strong fine angular blocky; hard, firm, sticky and plastic; few fine Expored roots; common very fine tubular pores; 10 percent pebbles; many moderately thick clay films on faces of ped and lining pores; strongly effervescent; mildly alkaline (pH 7.4); clear smooth boundary.

**Bt2**—28 to 43 inches; dark yellowish brown (10YR 4/6) gravelly clay, dark yellowish brown (10YR 3/6) moist; moderate medium prismatic structure parting to strong fine angular blocky; hard, firm, sticky and plastic; common very fine and few medium tubular pores; 15 percent pebbles; many moderately thick pressure faces; strongly effervescent; mildly alkaline (pH 7.6); abrupt wavy boundary.

**Cr**—43 inches; highly fractured shale.

**Typical Pedon Location**

**Soil name and map unit in which located:** Chad cobbly loam.
30 to 50 percent slopes, in Walti-Softscab-Soft association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 28 miles northeast of Austin; about 1,000 feet south and 1,600 feet west of the northeast corner of sec. 8, T. 21 N., R. 48 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and spring, dry late in June through October

**Average annual soil temperature:** 43 to 45 degrees F

**Thickness of the mollic epipedon:** 10 to 15 inches
(includes the upper part of the argillic horizon in some pedons)

**Combined thickness of the A and Bt horizons:** 40 to 52 inches

**Depth to bedrock:** 40 to 60 inches

**Content of clay in the upper part of the argillic horizon:**
35 to 45 percent when mixed

**Content of rock fragments in the control section:** 10 to 30 percent fine pebbles

**Other characteristics:** C horizon present in some pedons

A horizon:
Value—4 or 5 dry
Chroma—2 or 3

Bt horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 in the upper part; as much as 6 in the lower part
Texture—clay loam or clay, commonly gravelly
Structure—prismatic or angular blocky

**Chedehap Series**

**Depth class:** Very deep

**Drainage class:** Well drained

**Parent material:** Alluvium

**Positions on landscape:** Inset fans, fan aprons

**Slope:** 2 to 8 percent

**Mean annual precipitation:** About 8 inches

**Mean annual temperature:** About 51 degrees F

**Taxonomic class:** Coarse-loamy, mixed, mesic Xerollic Camborthids

**Typical Pedon**

About 30 percent of the surface is covered with pebbles.

A—0 to 5 inches; light brownish gray (10YR 6/2) coarse sandy loam, brown (10YR 3/2) moist; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; many fine and common medium interstitial and vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.

Bw—5 to 12 inches; light brownish gray (10YR 6/2) sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and medium roots and common fine roots; common fine and medium tubular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.

Bk1—12 to 25 inches; light gray (10YR 7/2) sandy loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; few fine tubular pores; strongly effervescent; moderately alkaline (pH 8.2); gradual smooth boundary.

Bk2—25 to 37 inches; light gray (10YR 7/2) sandy loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, nonsticky and nonplastic; very few fine roots; few fine tubular pores; 10 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt irregular boundary.
2Bk3—37 to 60 inches; light brownish gray (10YR 6/2) loamy coarse sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; 15 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6).

**Typical Pedon Location**

*Soil name and map unit in which located:* Chedehap coarse sandy loam, 2 to 8 percent slopes, in Chedehap-Enko-Ricet association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 9 miles southeast of Austin; about 1,400 feet north and 2,300 feet east of the southwest corner of sec. 21, T. 18 N., R. 45 E.

**Range in Characteristics**

*Soil moisture content:* Moist in some part from mid-October through May, dry in summer and early in fall

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to 2C horizon:* 25 to 40 inches

*Control section:*
  - Texture—averages sandy loam or coarse sandy loam
  - Content of clay—9 to 14 percent
  - Content of rock fragments—0 to 15 percent pebbles when mixed

*A horizon:*
  - Value—5 or 6 dry, 3 or 4 moist
  - Chroma—2 or 3
  - Reaction—neutral to moderately alkaline

*Bw horizon:*
  - Value—5 or 6 dry, 3 or 4 moist
  - Chroma—2 or 3
  - Structure—weak and prismatic, or weak or moderate and subangular blocky
  - Reaction—neutral to moderately alkaline

**Chiara Series**

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Mantle of loess that is high in content of volcanic ash over alluvium derived from various kinds of rock

*Positions on landscape:* Fan piedmont remnants

*Slope:* 2 to 15 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 48 degrees F

*Taxonomic class:* Loamy, mixed, mesic, shallow Xerollic Durorthids

**Typical Pedon**

*A1—0 to 2 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 3/3) moist; moderate very thin and weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine roots; many very fine and fine tubular pores and common fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary.*

*A2—2 to 5 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; strong thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 10 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary.*

*Bw—5 to 11 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine roots and few medium and coarse roots; few fine tubular pores; 10 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.*

*Bqk—11 to 16 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine and very fine roots; few fine tubular pores; 20 percent weakly cemented durrinos; strongly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary.*

*2Bqkm—16 to 26 inches; white (10YR 8/2), indurated duripan with continuous, very thin, silica laminae; massive; extremely hard, very firm; violently effervescent; strongly alkaline (pH 8.8).*

**Typical Pedon Location**

*Soil name and map unit in which located:* Chiara very fine sandy loam, 2 to 8 percent slopes, in Biopy-Chiara-Cortez association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 20 miles north of Battle Mountain; about 450 feet west and 600 feet north of the southeast corner of sec. 33, T. 36 N., R. 45 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 47 to 53 degrees F

*Depth to the duripan:* 10 to 20 inches

*Depth to lime accumulation:* 7 to 15 inches

*Control section:*
  - Content of clay—5 to 18 percent
  - Content of sand—less than 15 percent fine or coarser
Texture—very fine sandy loam, loam, or silt loam
Content of rock fragments—dominantly as much as
5 percent when mixed, mainly pebbles; 4 to 25
percent, mainly duripan fragments, in thin layers
in some pedons

A horizon:
Value—3 or 4 moist
Chroma—2 or 3
Structure—weak or moderate, thin to thick, and
platy, or massive
Reaction—neutral to moderately alkaline

Bw horizon:
Value—6 or 7 dry, 3 to 5 moist
Chroma—3 or 4
Structure—weak to strong, fine to coarse, and
subangular blocky, or weak and prismatic
Reaction—mildly alkaline to strongly alkaline

Bq horizon:
Reaction—moderately alkaline or strongly alkaline
Other characteristics—20 to 60 percent weakly
cemented, brittle durinodules 0.3 to 1.0 inch in
diameter

Bqkm horizon:
Value—6 to 8 dry, 5 to 7 moist
Chroma—2 to 4
Structure—massive; or weak or moderate, thick,
and platy
Other characteristics—gravelly and sandy strata
below a depth of 40 inches in some pedons

Clan Alpine Series

Depth class: Moderately deep
Drainage class: Well drained
Parent material: Residuum and colluvium derived from
rhyolitic and andesitic tuff
Positions on landscape: Side slopes of mountains
Slope: 15 to 75 percent
Mean annual precipitation: About 15 inches
Mean annual temperature: About 41 degrees F
Taxonomic class: Loamy-skeletal, mixed, frigid Typic
Argixerolls

Typical Pedon

About 20 percent of the surface is covered with
pebbles, 40 percent with cobbles, and 5 percent
with stones.

A1—0 to 4 inches; grayish brown (10YR 5/2) extremely
cobbly loam, very dark grayish brown (10YR 3/2)
moist; moderate medium subangular blocky
structure; slightly hard, very friable, nonsticky and
nonplastic; common very fine and fine roots; many
very fine vesicular pores; 25 percent pebbles and
35 percent cobbles; neutral (pH 7.2); abrupt smooth
boundary.

A2—4 to 9 inches; grayish brown (10YR 5/2) cobbly
loam, very dark grayish brown (10YR 3/2) moist;
moderate medium subangular blocky structure;
slightly hard, very friable, slightly sticky and slightly
plastic; many very fine and fine roots; many very
fine tubular pores; 10 percent pebbles and 10
percent cobbles; neutral (pH 7.2); clear wavy
boundary.

Bt1—9 to 12 inches; brown (10YR 5/3) very gravelly
loam, dark brown (10YR 3/3) moist; moderate
medium angular blocky structure; slightly hard,
friable, sticky and plastic; common fine and medium
roots; common fine tubular pores; common thin clay
films on peds; 30 percent pebbles and 10 percent
clay; mildly alkaline (pH 7.4); clear wavy
boundary.

Bt2—12 to 22 inches; light yellowish brown (10YR 6/4)
very gravelly clay loam, dark yellowish brown (10YR
4/4) moist; strong medium angular blocky structure;
hard, friable, very sticky and plastic; few medium
roots; many very fine tubular pores; common
moderately thick clay films on peds; 30 percent
pebbles and 10 percent cobbles; mildly alkaline (pH
7.4); gradual wavy boundary.

Bt3—22 to 27 inches; light yellowish brown (10YR 6/4)
very gravelly loam, dark yellowish brown (10YR 4/4)
moist; moderate medium subangular blocky
structure; slightly hard, friable, sticky and plastic;
common fine and medium roots; common very fine
tubular pores; common thin clay films on peds; 30
percent pebbles and 10 percent cobbles; mildly
alkaline (pH 7.4); clear wavy boundary.

BC—27 to 38 inches; pale brown (10YR 6/3) very
gravelly loam, dark brown (10YR 4/3) moist;
massive; soft, very friable, slightly sticky and
nonplastic; few fine roots; common very fine
interstitial pores; 40 percent pebbles and 10 percent
cobbles; mildly alkaline (pH 7.6); abrupt irregular
boundary.

2Cr—38 to 49 inches; weathered, highly fractured
rhyolitic tuff; some soil material and roots in some
pockets.

Typical Pedon Location

Soil name and map unit in which located: Clan Alpine
extremely cobbly loam, 30 to 50 percent slopes, in
ltca-Clan Alpine-Torro association

Location in Nevada: Lander County, Nevada, South
Part, survey area; about 33 miles southwest of
Austin: about 1,200 feet south and 800 feet west of the northeast corner of sec. 15, T. 17 N., R. 38 E.

Range in Characteristics
Soil moisture content: Moist in winter and spring, dry in mid-July to mid-October
Average annual soil temperature: 43 to 45 degrees F
Thickness of the mollic epipedon: 8 to 14 inches (includes the Bt1 horizon in some pedons)
Thickness of the solum: 20 to 40 inches
Depth to paralithic contact: 20 to 40 inches
Depth to lithic contact: 40 to 60 inches
Other characteristics: Some pedons do not have a BC horizon overlying the paralithic contact

Control section:
Content of clay—25 to 35 percent
Content of rock fragments—35 to 60 percent, mainly pebbles and cobbles

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—weak or moderate, fine or medium, and subangular blocky

Bt horizon:
Value—dominantly 6 or 7 dry and 4 or 5 moist, but 5 dry and 3 moist in the upper part in some pedons
Chroma—3 or 4
Texture—very cobbly clay loam, very cobbly loam, or very gravelly clay loam
Structure—subangular blocky or angular blocky
Reaction—neutral or mildly alkaline

2R—15 inches; rhyolitic tuff

Typical Pedon Location
Soil name and map unit in which located: Cleavage very gravelly fine sandy loam, 4 to 15 percent slopes, in Softscrabble-Walti-Cleavage association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 25 miles east of Austin; about 2,000 feet south and 2,800 feet east of the northwest corner of sec. 28, T. 17 N., R. 38 E.

Range in Characteristics
Soil moisture content: Moist in winter and spring, dry in July through October for 70 to 120 consecutive days
Average annual soil temperature: 44 to 47 degrees F
Thickness of the mollic epipedon: 7 to 10 inches (excluding Bt horizon)
Depth to bedrock: 14 to 20 inches
Reaction: Neutral or mildly alkaline

Control section:
Content of clay—20 to 35 percent
Content of rock fragments—50 to 80 percent, mostly pebbles and cobbles

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—platy, granular, or subangular blocky

BA horizon:
Chroma—2 to 4
Texture—very cobbly loam or very gravelly loam

cr gravelly fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine vesicular pores; 30 percent pebbles and 10 percent cobbles; neutral (pH 7.2); abrupt smooth boundary.

BA—4 to 7 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 25 percent pebbles and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt—7 to 15 inches; brown (10YR 5/3) extremely gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium angular blocky structure; slightly hard, friable, sticky and plastic; few medium roots; common very fine tubular pores; common thin clay films on faces of peods; 50 percent pebbles and 20 percent cobbles; neutral (pH 7.2); abrupt irregular boundary.

Cleavage Series
Depth class: Shallow
Drainage class: Well drained
Parent material: Residuum and colluvium derived from rhyolite and other igneous rock
Positions on landscape: Crests and side slopes of mountains
Slope: 4 to 30 percent
Mean annual precipitation: About 14 inches
Mean annual temperature: About 44 degrees F

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Argixerolls

Typical Pedon
About 60 percent of the surface is covered with pebbles and 10 percent with cobbles.
A—0 to 4 inches: grayish brown (10YR 5/2) very

A—0 to 4 inches: grayish brown (10YR 5/2) very
Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—dominantly very cobbly, extremely cobbly, very gravelly, or extremely gravelly clay loam or very gravelly sandy clay loam, but very cobbly or very gravelly loam in some pedons
Structure—subangular blocky, angular blocky, or massive

Colbar Series

Depth class: Moderately deep
Drainage class: Well drained
Parent material: Residuum and colluvium derived from rhyolitic and andesitic rock
Positions on landscape: Foothills
Slope: 15 to 50 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 48 degrees F
Taxonomic class: Fine-loamy, mixed, mesic Xerollic Hapludolls

Typical Pedon

About 10 percent of the surface is covered with pebbles and 30 percent with cobbles.
A—0 to 3 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; weak very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; common very fine vesicular and tubular pores; 15 percent pebbles and 20 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary.
BA—3 to 8 inches; yellowish brown (10YR 5/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; common very fine and fine tubular pores; 10 percent pebbles and 5 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary.
Bt—8 to 22 inches; yellowish brown (10YR 5/4) cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; many thin clay films in pores and on peds; 5 percent pebbles, 10 percent cobbles, and 5 percent stones; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bk—22 to 26 inches; yellowish brown (10YR 5/4) cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; 5 percent pebbles, 10 percent cobbles, and 5 percent stones; few thin slightly effervescent lime coatings on the underside of rock fragments; noneffervescent in matrix; moderately alkaline (pH 8.4); abrupt wavy boundary.

2R—26 inches; fractured, rhyolitic tuff.

Typical Pedon Location

Soil name and map unit in which located: Colbar very cobbly loam, 30 to 50 percent slopes, in Old Camp-Rock outcrop-Colbar association, strongly sloping
Location in Nevada: Lander County, Nevada, North Part, survey area; about 30 miles southwest of Battle Mountain; about 1,600 feet north and 1,760 feet east of the southwest corner of sec. 11 T. 26 N., R. 42 E.

Range in Characteristics

Soil moisture content: Dry in summer and fall, moist late in winter and in spring
Average annual soil temperature: 48 to 52 degrees F
Depth to bedrock: 20 to 40 inches
Combined thickness of the A and Bt horizons: 11 to 24 inches
Other characteristics: Bk horizon that has thin lime coatings on the underside of rock fragments present below the Bt horizon in some pedons

Control section:
Content of clay—25 to 35 percent
Content of rock fragments—15 to 35 percent, mainly pebbles and cobbles

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Structure—weak or moderate, very fine to medium, and subangular blocky; or weak or moderate, very thin to medium, and platy
Reaction—mildly alkaline or moderately alkaline

Bt horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4
Structure—weak to strong, very fine, fine, or medium, and subangular blocky
Texture—cobbly loam, cobbly clay loam, or gravelly clay loam
Reaction—mildly alkaline or moderately alkaline
C and Bk horizons (when present):
Value—5 to 7 dry, 4 or 5 moist
Chroma—3 or 4
Texture—gravelly loam or cobbly loam

Coztur Series

Depth class: Shallow
Drainage class: Well drained
Parent material: Residuum derived from volcanic and tuffaceous rock
Positions on landscape: Crests and side slopes of mountains and hills
Slope: 2 to 30 percent
Mean annual precipitation: About 11 inches
Mean annual temperature: About 43 degrees F
Taxonomic class: Loamy, mixed, frigid Lithic Xerollic Haplargids

Typical Pedon

About 10 percent of the surface is covered with pebbles.
A1—0 to 3 inches: light brownish gray (10YR 6/2) loam, very dark grayish brown (10YR 3/2) moist; moderate thick platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots and few medium roots; common fine and medium vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.
A2—3 to 7 inches: light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine and medium tubular pores; 5 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.
BA—7 to 11 inches: light brownish gray (2.5Y 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine and medium tubular pores; 5 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.
Bt—11 to 17 inches: light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common fine tubular pores; common thin clay films on peds and lining pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.
R—17 inches; unweathered tuff.

Typical Pedon Location
Soil name and map unit in which located: Coztur loam, 2 to 8 percent slopes, in Coztur-Genaw association
Location in Nevada: Lander County, Nevada, North Part, survey area; about 38 miles southwest of Battle Mountain; about 1,270 feet south and 250 feet west of the northeast corner of sec. 16, T. 27 N., R. 41 E.

Range in Characteristics

Soil moisture content: Dry in summer and fall, moist in winter and spring
Average annual soil temperature: 43 to 46 degrees F
Depth to bedrock: 14 to 20 inches
Reaction: Neutral or mildly alkaline
A horizon:
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 or 3

BA horizon:
Hue—2.5Y or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4

Bt horizon:
Hue—2.5Y or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4
Content of clay—22 to 35 percent
Texture—loam or clay loam
Content of rock fragments—less than 15 percent, mainly pebbles

Creemon Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Silty alluvium that is derived from various kinds of rock and includes some volcanic ash
Positions on landscape: Fan skirts, inset fans, beach terraces
Slope: 0 to 2 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 49 degrees F
Taxonomic class: Coarse-silty, mixed, mesic Duric Camborthids

Typical Pedon

A1—0 to 6 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; strong thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and few fine roots; many fine vesicular pores and many very fine tubular
pores: moderately alkaline (pH 8.0); clear wavy boundary.

A2—6 to 10 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate medium platy structure; hard, very friable, slightly sticky and plastic; many very fine and few fine roots; many very fine tubular pores; moderately alkaline (pH 8.4); clear wavy boundary.

Bw—10 to 15 inches; very pale brown (10YR 7/3) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and few fine roots; common very fine tubular pores; strongly alkaline (pH 8.6); abrupt irregular boundary.

Bqk1—15 to 21 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine tubular pores; 25 percent weak durinodes 10 to 25 millimeters in diameter; 50 percent discontinuous, hard, firm, brittle, weakly silica-cemented lenses 1 to 6 inches thick; strongly effervescent; common fine lime filaments; strongly alkaline (pH 8/6); clear wavy boundary.

Bqk2—21 to 28 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and slightly plastic; many very fine and few fine and medium roots; common very fine tubular pores; 35 percent weak and moderately strong durinodes 20 to 35 millimeters in diameter; common fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8): gradual smooth boundary.

Bqk3—28 to 45 inches; very pale brown (10YR 7/3) and yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) and brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine roots and few fine and medium roots; few very fine tubular pores; 25 percent weak and moderately strong durinodes 15 to 30 millimeters in diameter; few fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

C—45 to 62 inches; light yellowish brown (10YR 6/4) gravelly very fine sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and slightly plastic; common very fine roots; common very fine interstitial and tubular pores; 15 percent flat and rounded pebbles that are 2 to 30 millimeters in size; strongly effervescent; strongly alkaline (pH 8.6).

Typical Pedon Location

Map unit in which located: Creemon silt loam, 0 to 2 percent slopes

Location in Nevada: Lander County, Nevada, North Part, survey area; about 40 miles southwest of Battle Mountain; about 2,400 feet north and 1,250 feet east of the southwest corner of sec. 15, T. 26 N., R. 43 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in some part for short periods from October through May

Average annual soil temperature: 48 to 52 degrees F

Combined thickness of the A and Bw horizons: 11 to 15 inches

Depth to the Bqk horizon: 11 to 20 inches

Other characteristics: Lenses of volcanic ash in the lower part in some pedons; as much as 20 percent pebbles at a depth of more than 40 inches in some pedons; continuous, weakly silica-cemented layer at a depth of 40 to 55 inches in some pedons; generally moderately or strongly affected by salt and sodium below a depth of 20 to 30 inches, but moderately or strongly affected by salt and sodium throughout in some pedons

Control section:

Content of clay—8 to 18 percent
Texture—stratified silt loam to very fine sandy loam
Reaction—moderately alkaline or strongly alkaline

A horizon:

Value—6 or 7 dry, 3 or 4 moist
Chroma—2 or 3
Consistency—soft or slightly hard, nonsticky or slightly sticky, slightly plastic or plastic
Effervescence—noneffervescent or slightly effervescent

Bw horizon:

Value—6 or 7 dry
Chroma—2 or 3
Structure—thin and platy, or massive
Consistency—soft or slightly hard, nonsticky or slightly sticky, slightly plastic or plastic

Bqk horizon:

Value—5 to 7 dry
Chroma—2 to 4
Consistency—soft or slightly hard, nonsticky or slightly sticky
Effervescence—strongly effervescent or violently effervescent

Other characteristics—20 to 40 percent durinodes; 3- to 10-inch-thick layer in many pedons that is 20 to 60 percent discontinuous, weakly silica-cemented lenses and is between depths of 11 and 29 inches


Cren Series

**Depth class:** Very deep
**Drainage class:** Well drained

**Parent material:** Silty alluvium that is derived from various kinds of rock and includes some volcanic ash

**Positions on landscape:** Fan skirts, inset fans
**Slope:** 0 to 2 percent
**Mean annual precipitation:** About 7 inches
**Mean annual temperature:** About 49 degrees F

**Taxonomic class:** Coarse-silty, mixed (calcareous), mesic Durorthidic Torriorthents

**Typical Pedon**

**A**—0 to 7 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; moderate very thin and thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many fine vesicular pores and many very fine interstitial and tubular pores; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

**Bk1**—7 to 18 inches; light gray (2.5Y 7/2) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine interstitial and tubular pores; violently effervescent; common fine filaments of lime; 2 percent small, weak durinodes; strongly alkaline (pH 8.6); gradual smooth boundary.

**Bk2**—18 to 26 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 2 percent weak durinodes; violently effervescent; few fine filaments of lime; strongly alkaline (pH 8.6); abrupt smooth boundary.

**Bqk1**—26 to 29 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine interstitial and tubular pores; 30 percent weak, discontinuous, silica-cemented lenses; 2 percent small durinodes; violently effervescent; common medium filaments of lime; strongly alkaline (pH 8.8); abrupt smooth boundary.

**Bqk2**—29 to 49 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; few fine horizontal lenses of volcanic ash; 30 percent weak durinodes 5 to 15 millimeters in diameter; violently effervescent; few fine filaments of lime; strongly alkaline (pH 8.8); clear wavy boundary.

**Bqk3**—49 to 60 inches; pale brown (10YR 6/3) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and plastic; many very fine roots; many very fine tubular pores; 20 percent weak and moderately strong durinodes 10 to 30 millimeters in diameter; violently effervescent; common fine filaments of lime; strongly alkaline (pH 8.6).

**Typical Pedon Location**

**Map unit in which located:** Cren silt loam

**Location in Nevada:** Lander County, Nevada, North Part, survey area; about 62 miles southwest of Battle Mountain; about 2,700 feet west and 2,200 feet south of the northeast corner of sec. 34, T. 25 N., R. 40 E.

**Range in Characteristics**

**Soil moisture content:** Usually dry, but moist in some part for short periods from October through May

**Average annual soil temperature:** 48 to 53 degrees F

**Depth to the Bqk horizon:** 15 to 30 inches

**Reaction:** Moderately alkaline or strongly alkaline

**Other characteristics:** Lenses of volcanic ash present in the lower part in some pedons

**Control section**

- Texture—averages silt loam that is less than 15 percent fine sand or coarser textured material
- Content of clay—8 to 18 percent

**A horizon**

- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—2 or 3
- Structure—platy, prismatic, or massive

**Bk horizon**

- Value—5 to 7 dry
- Chroma—2 to 4
- Texture—dominantly silt loam, but common thin strata of very fine sandy loam or fine sandy loam in some pedons
- Consistence—soft or slightly hard (dry), nonsticky or slightly sticky (wet)

**Bqk horizon**

- Value—5 to 7 dry
- Chroma—2 to 4
- Texture—dominantly silt loam, but common thin strata of very fine sandy loam or fine sandy loam in some pedons
- Consistence—soft or slightly hard (dry), nonsticky or slightly sticky (wet)

**Other characteristics**—20 to 40 percent weakly or
moderately strongly cemented durinodes; 3- to 10-inch-thick layer in some pedons that is 20 to 50 percent discontinuous and weakly silica-cemented and is at a depth of 15 to 30 inches

**Davey Series**

*Depth class:* Very deep  
*Drainage class:* Somewhat excessively drained  
*Parent material:* Alluvium derived from various kinds of rock  
*Positions on landscape:* Sand sheets  
*Slope:* 0 to 4 percent  
*Mean annual precipitation:* About 9 inches  
*Mean annual temperature:* About 49 degrees F  
*Taxonomic class:* Sandy, mixed, mesic Xerollic Camborthids

**Typical Pedon**

A—0 to 5 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate thin and medium platy; slightly hard, very friable, nonsticky and slightly plastic; common very fine random roots and few fine horizontal roots; many very fine vesicular, interstitial, and tubular pores; neutral (pH 7.4); clear wavy boundary.

Bw—5 to 13 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine random roots and common fine and medium oblique and horizontal roots; common very fine vesicular, interstitial, and tubular pores; mildly alkaline (pH 7.6); clear wavy boundary.

C—13 to 20 inches; light gray (10YR 7/2) loamy fine sand, brown (10YR 4/3) moist; soft, very friable, nonsticky and nonplastic; many very fine random roots and very few fine and medium oblique roots; common very fine vesicular and interstitial pores and few very fine tubular pores; 3 percent rounded pebbles 2 to 10 millimeters in diameter; slightly effervescent; strongly alkaline (pH 8.5); clear wavy boundary.

Ck1—20 to 29 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine random roots and very few fine and few medium oblique roots; common very fine vesicular and interstitial pores; 3 percent rounded pebbles 2 to 15 millimeters in diameter; few fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

Ck2—29 to 41 inches; very pale brown (10YR 7/3) loamy fine sand, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine random roots and very few fine and medium oblique and vertical roots; common very fine vesicular and interstitial pores; 2 percent weak and very weak durinodes 5 to 10 millimeters in diameter; 10 percent 2- to 30-millimeter, flat and rounded, partially lime-coated pebbles; common fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.

*Ck3—41 to 60 inches; very pale brown (10YR 7/3) loamy fine sand, yellowish brown (10YR 5/4) moist; few fine faint iron mottles that are brownish yellow (10YR 6/6) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine random roots and very few fine vertical roots; common very fine vesicular and interstitial pores; 10 percent weak and very weak durinodes 5 to 30 millimeters in diameter; 5 percent rounded, 2- to 30-millimeter, partially lime-coated pebbles; slightly effervescent in matrix; strongly alkaline (pH 8.8).**

**Typical Pedon Location**

*Map unit in which located:* Davey fine sandy loam  
*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 15 miles northwest of Battle Mountain; about 60 feet south and 2,900 feet west of the northeast corner of sec. 9, T. 34 N., R. 45 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in May through October  
*Average annual soil temperature:* 47 to 53 degrees F  
*Combined thickness of the A and Bw horizons:* 11 to 23 inches  
*Depth to lime accumulation:* 11 to 24 inches  
*Depth to gypsum crystals (in some pedons):* More than 20 inches  
*Other characteristics:* Gypsum crystals at a depth of more than 20 inches in some pedons; continuous, weak or strong, silica cementation below a depth of 50 inches in some pedons; strata of unconformable very fine sandy loam or silt loam below a depth of 40 inches in some pedons

**Control section:**  
*Content of clay:* 5 to 10 percent  
*Content of rock fragments:* as much as 30 percent, but averages less than 15 percent

**A horizon:**  
*Hue:* 10YR or 2.5Y  
*Value:* 5 or 6 dry (value of more than 5.5 occurs when the upper 7 inches is mixed); 3 or 4 moist  
*Chroma:* 1 to 3  
*Reaction:* Neutral or mildly alkaline
Decram Series

Depth class: Moderately deep
Drainage class: Well drained
Parent material: Residueum derived from quartzite, chert, and volcanic rock
Positions on landscape: Shoulder slopes and the upper side slopes of mountains
Slope: 15 to 50 percent
Mean annual precipitation: About 18 inches
Mean annual temperature: About 42 degrees F
Taxonomic class: Loamy-skeletal, mixed Typic Cryoborolls

Typical Pedon

From 3 to 15 percent of the surface is covered with stones. 10 percent with cobbles, and 40 percent with pebbles.
A1—0 to 6 inches: dark grayish brown (10YR 4/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine roots; common fine and very fine interstitial pores; 35 percent pebbles and 10 percent cobbles; neutral (pH 7.2); clear smooth boundary.
A2—6 to 11 inches: brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine and very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; common fine and very fine interstitial and tubular pores; 35 percent pebbles and 5 percent cobbles; neutral (pH 7.2); clear smooth boundary.
Bw—11 to 24 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate fine angular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine interstitial and tubular pores; 45 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.
C—24 to 28 inches; yellowish brown (10YR 5/4) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist; weak fine and very fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few fine and very fine roots; common very fine interstitial pores; 40 percent pebbles and 30 percent cobbles; slightly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.
R—28 inches; andesite.

Typical Pedon Location

Soil name and map unit in which located: Decram very gravelly loam, 15 to 30 percent slopes, extremely stony, in Decram-Hapgood- Chad association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 20 miles northeast of Austin, in the Simpson Park Mountains; about 2,000 feet east and 2,300 feet north of the southwest corner of sec. 30, T. 21 N., R. 48 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in summer and early in fall for 60 to 90 days
Average annual soil temperature: 42 to 45 degrees F
Thickness of the mollis epipedon: 7 to 15 inches
Average summer soil temperature: 55 to 59 degrees F
Depth to bedrock: 20 to 40 inches

Control section (when mixed):
Content of clay—18 to 25 percent
Content of angular rock fragments—35 to 70 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Reaction—neutral or mildly alkaline

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—very gravelly loam or very cobbly loam
Structure—angular blocky or subangular blocky
Reaction—neutral or mildly alkaline

C horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—very gravelly loam, extremely gravelly loam, very cobbly loam, or extremely cobbly loam
Reaction—mildly alkaline or moderately alkaline
Other characteristics—coatings of lime on the underside of rock fragments in some pedons

Defler Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Alluvium that is derived from various kinds of rock and includes some loess and volcanic ash
Positions on landscape: Inset fans
Slope: 0 to 4 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 47 degrees F
Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Typic Torriorthents

Typical Pedon

About 30 percent of the surface is covered with pebbles.
A—0 to 4 inches; very pale brown (10YR 7/3) gravelly fine sandy loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; common very fine vesicular pores; 30 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bk1—4 to 11 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 30 percent pebbles and 5 percent cobbles; thin lime coatings on the underside of pebbles; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Bk2—11 to 16 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine interstitial pores; 45 percent pebbles, 5 percent cobbles, and 5 percent stones; thin lime coatings on rock fragments; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bqk—16 to 21 inches; very pale brown (10YR 7/3) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine interstitial pores; 15 percent weakly silicate-cemented durinodes 5 to 20 millimeters in diameter; 45 percent pebbles, 5 percent cobbles, and 5 percent stones; disseminated lime and common medium lime coatings on rock fragments; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

B'k1—21 to 34 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; common very fine interstitial pores; 50 percent pebbles and 5 percent cobbles; common thin lime coatings on the underside of rock fragments; strongly effervescent; mildly alkaline (pH 7.8); clear wavy boundary.

B'k2—34 to 38 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine tubular pores; 45 percent pebbles; noneffervescent in matrix and common fine slightly effervescent lime filaments; mildly alkaline (pH 7.8); clear wavy boundary.

2C—38 to 60 inches; pale brown (10YR 6/3), stratified extremely gravelly coarse sand and very gravelly sandy loam, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; common very fine interstitial pores; 50 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.8).

Typical Pedon Location

Soil name and map unit in which located: Defler gravelly fine sandy loam, 0 to 2 percent slopes, in Defler-Orovada association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 24 miles southwest of Austin, in the Smith Creek Valley, about 1,200 feet west and 225 feet north of the southeast corner of sec. 35, T. 17 N., R. 40 E.

Range in Characteristics

Soil moisture content: Moist in some part in November through May; dry in June through October
Average annual soil temperature: 47 to 52 degrees F
Depth to 2C horizon: 35 to 45 inches
Reaction: Mildly alkaline to strongly alkaline
Control section:
Content of clay—8 to 18 percent
Texture—averages very gravelly fine sandy loam, very gravelly loam, or very gravelly sandy loam
Content of rock fragments—35 to 60 percent, mainly pebbles
A horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 or 3
Structure—platy or granular
Bk horizon:
Value—6 or 7 dry, 3 to 5 moist
Chroma—2 to 4
Other characteristics—filaments or coatings of lime on rock fragments; strata that are 5 to 15 percent weakly silica-cemented durinodes present at a depth of more than 12 inches in some pedons
2C horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4
Texture—stratified very gravelly sandy loam to extremely gravelly coarse sand
Content of rock fragments—50 to 70 percent, mainly pebbles

Desatoya Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Alluvium derived from various kinds of rock
Positions on landscape: Fan piedmont remnants
Slope: 2 to 50 percent
Mean annual precipitation: About 11 inches
Mean annual temperature: About 47 degrees F
Taxonomic class: Clayey over loamy-skeletal, montmorillonitic, mesic Durixerollic Haplargids

Typical Pedon
About 50 percent of the surface is covered with pebbles.
A—0 to 3 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, sticky and plastic; few very fine roots; many very fine vesicular pores; 35 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.
Bt1—3 to 6 inches; brown (10YR 5/3) clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; soft, very friable, very sticky and very plastic; common very fine and fine roots; many very fine interstitial pores; few thin clay films bridging sand grains and on faces of peds; 5 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.
Bt2—6 to 10 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine interstitial and tubular pores; many thin and common moderately thick clay films on faces of peds; 30 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary.
Btk—10 to 14 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine and fine roots and few medium roots; few very fine tubular and interstitial pores; common thin clay films on faces of peds; 30 percent pebbles; disseminated lime and common fine lime concretions; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.
Bqk1—14 to 23 inches; very pale brown (10YR 7/3), continuous, weakly silica-cemented very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, firm, nonsticky and nonplastic; few fine and medium roots; few very fine tubular pores; 40 percent pebbles; 30 percent discontinuous strongly silica-cemented masses; disseminated lime and many fine lime concretions; violently effervescent; very strongly alkaline (pH 8.6); clear smooth boundary.
Bqk2—23 to 38 inches; very pale brown (10YR 8/3), continuous, weakly silica-cemented very gravelly sandy loam, very pale brown (10YR 7/4) moist; massive; hard, firm, nonsticky and nonplastic; common very fine and fine roots; many very fine interstitial pores; 55 percent pebbles; 20 percent discontinuous strongly silica-cemented lenses and 20 percent horizontal lenses of very gravelly loamy sand as much as 2 inches thick; many fine concretions and seams of lime; violently effervescent; strongly alkaline (pH 9.0); clear smooth boundary.
Bqk3—38 to 60 inches; very pale brown (10YR 8/3), very gravelly loamy sand, very pale brown (10YR 7/4) moist; single grain; loose, nonsticky and
nonplastic; few very fine and fine roots; many very fine interstitial pores; 55 percent pebbles; 30 percent discontinuous strongly silica-cemented masses; many fine concretions and seams of lime; violently effervescent; strongly alkaline (pH 9.0).

**Typical Pedon Location**

**Soil name and map unit in which located:** Desatoya very gravelly loam, 8 to 15 percent slopes, in Desatoya-Pineval-Grassval association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 28 miles west of Austin; about 2,000 feet east and 1,000 feet south of the northwest corner of sec. 10, T. 18 N., R. 39 E.

**Range in Characteristics**

**Soil moisture content:** Usually dry early in June through October; moist in winter and spring

**Average annual soil temperature:** 48 to 52 degrees F

**Depth to weak cementation:** 14 to 20 inches

**Depth to carbonates:** 10 to 20 inches

**A horizon:**
- Value—5 or 6 dry, 3 to 5 moist
- Chroma—2 or 3
- Structure—weak or moderate and subangular blocky or platy
- Reaction—neutral or mildly alkaline

**Bt horizon:**
- Value—5 or 6 dry, 3 to 5 moist
- Chroma—3 or 4 moist
- Texture—gravelly clay loam or gravelly clay
- Content of clay—35 to 45 percent
- Content of rock fragments—20 to 30 percent, mainly pebbles
- Structure—moderate or strong, fine or medium, and subangular blocky
- Reaction—mildly alkaline or moderately alkaline

**Bqk horizon:**
- Texture—stratified extremely gravelly sandy loam to very gravelly loamy sand, but averages very gravelly or extremely gravelly sandy loam
- Content of clay—8 to 18 percent
- Content of rock fragments—40 to 80 percent, mainly pebbles
- Consistence—hard or very hard (dry), firm or slightly brittle (moist)
- Reaction—moderately alkaline to very strongly alkaline

Other characteristics—dominantly continuously weakly silica-cemented, but discontinuous, weakly or strongly silica-cemented strata present below a depth of 38 inches

**Desatoya Variant**

**Depth class:** Very deep

**Drainage class:** Well drained

**Parent material:** Alluvium derived from various kinds of rock

**Positions on landscape:** Side slopes of deeply dissected fan piedmont remnants

**Slope:** 4 to 50 percent

**Mean annual precipitation:** About 9 inches

**Mean annual temperature:** About 49 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic Xerolic Haplargids

**Typical Pedon**

About 45 percent of the surface is covered with pebbles and 5 percent with cobbles.

A—0 to 3 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; common very fine vesicular and interstitial pores; 35 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bt—3 to 8 inches; pale brown (10YR 6/3) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse subangular blocky structure; slightly hard, very friable, very sticky and very plastic; common very fine and fine roots; common very fine tubular pores; common thin clay films on faces of peks; 20 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear irregular boundary.

Btk—8 to 13 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 25 percent discontinuous, weakly lime-cemented masses; few thin clay films bridging sand grains; 35 percent pebbles; few thin lime pendants on the underside of coarse fragments; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bk1—13 to 21 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 25 percent discontinuous, weakly lime-cemented masses; 50 percent pebbles; thin lime coatings on the underside of coarse fragments;
strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

**Bk**—21 to 26 inches; very pale brown (10YR 7/3), continuous, weakly lime-cemented gravelly sandy loam, brown (10YR 5/3) moist; massive; hard, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 20 percent pebbles; thin to medium lime coatings on coarse fragments; strongly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary.

**Bk**—26 to 50 inches; pale brown (10YR 6/3) very gravelly sand, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; 50 percent pebbles; common thin lime coatings and pendants on the underside of coarse fragments; strongly effervescent; strongly alkaline (pH 8.8).

**Typical Pedon Location**

**Soil name and map unit in which located:** Desatoya Variant very gravelly sandy loam, 15 to 50 percent slopes, in Spike-Desatoya Variant-Grassval association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 32 miles north of Austin; about 2,000 feet north and 1,000 feet west of the southeast corner of sec. 36, T. 23 N., R. 43 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and spring, dry in summer and early in fall

**Average annual soil temperature:** 47 to 49 degrees F

**Depth to the base of the Btk horizon:** 10 to 18 inches

**Depth to carbonates:** 0 to 10 inches

**Control section:**

Texture (when mixed)—dominantly gravelly clay loam or gravelly sandy clay loam, but gravelly loam in some pedons

Content of clay—25 to 35 percent

Content of rock fragments (when mixed)—averages 15 to 35 percent, mainly pebbles, but as much as 45 percent in a single layer

**A horizon:**

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Effervescence—slightly effervescent or noneffervescent

**Bt and Btk horizons:**

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Effervescence—dominantly noneffervescent or slightly effervescent in the upper part, strongly effervescent in the lower part

**Reaction**—mildly alkaline or moderately alkaline

**Bk horizon:**

Hue—10YR or 2.5Y

Value—6 or 7 dry, 4 or 5 moist

Chroma—3 or 4

Reaction—moderately alkaline or strongly alkaline

Other characteristics—dominantly as much as 60 percent discontinuous, weak lime cementation, but continuous, weak lime cementation in some pedons

**Dewar Series**

**Depth class:** Shallow to duripan

**Drainage class:** Well drained

**Parent material:** Loess and mixed silty alluvium that includes some volcanic ash

**Positions on landscape:** Fan piedmont remnants, mountain valley fan remnants

**Slope:** 2 to 8 percent

**Mean annual precipitation:** About 9 inches

**Mean annual temperature:** About 46 degrees F

**Taxonomic class:** Loamy, mixed, mesic, shallow Xerolic Durargids

**Typical Pedon**

**A1**—0 to 2 inches; light brownish gray (10YR 6/2) gravelly loam, very dark brownish gray (10YR 3/2) moist; moderate to very thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine vesicular pores; 15 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary.

**A2**—2 to 4 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and common very fine roots; many very fine interstitial pores; 10 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary.

**Bt**—4 to 8 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common fine interstitial pores; common clay films on ped and bridging mineral grains; 15 percent pebbles; mildly alkaline (pH 7.6); gradual wavy boundary.

**Btk**—8 to 14 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky and plastic; common fine
and medium roots and few coarse roots; common fine interstitial pores; common thin clay films on 
peds; 15 percent moderate durinodes 5 to 15 
millimeters in diameter; 15 percent pebbles and 5 
percent cobbles and pan fragments; few fine soft 
lime masses; non-effervescent in matrix; mildly 
alkaline (pH 7.8); abrupt wavy boundary.

Bqkm—14 to 50 inches; very pale brown (10YR 7/3), 
indurated duripan, yellowish brown (10YR 5/4) 
moist; moderately thick and thick platy structure; 
extremely hard, extremely firm; few roots along 
horizontal fractures; continuous, 2- to 6-millimeter-
thick, brown (10YR 5/3), silica laminae on top and 
in horizontal bands throughout horizon, alternating 
with thin, strongly or weakly cemented strata in 
some pedons; violently effervescent; moderately 
alkaline (pH 8.6).

**Typical Pedon Location**

*Map unit in which located:* Dewar gravelly loam, 2 to 8 
percent slopes

*Location in Nevada:* Lander County, Nevada, South 
Part, survey area; about 12 miles east of Austin; 
about 150 feet east and 2,200 feet north of the 
southwest corner of sec. 12, T. 19 N., R. 45 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry 
early in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to indurated duripan:* 13 to 20 inches

**A horizon:**
- Chroma—2 or 3
- Structure—moderate or strong, very thin to thick, 
  and platy; or moderate or strong, fine or 
  medium, and granular
- Reaction—neutral to moderately alkaline

**Bt horizon:**
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—2 to 4 dry, 3 or 4 moist
- Texture—gravelly silty clay loam or gravelly clay 
  loam
- Content of clay—27 to 35 percent
- Content of rock fragments—15 to 30 percent, 
  mainly pebbles
- Structure—weak to strong, fine to coarse, and 
  subangular blocky
- Reaction—neutral to moderately alkaline

**Btk horizon (when present):**
- Content of clay—15 to 35 percent
- Other characteristics—less than 30 percent weak or 
  very weak durinodes

**Bqkm horizon:**
- Structure—massive, or moderately thick or very 
  thick and platy
- Other characteristics—strongly cemented or 
  discontinuously indurated strata below the 
  duripan in some pedons; 1- to 3-inch-thick 
  degraded duripan common on top in some 
  pedons

**Duco Series**

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from rhyolite and 
andesite

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 12 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic Lithic 
Argixerolls

**Typical Pedon**

About 20 percent of the surface is covered with 
pebbles, 15 percent with cobbles, and 10 percent 
with stones.

A1—0 to 3 inches: brown (10YR 5/3) stony loam, dark 
brown (10YR 3/3) moist; moderate fine granular 
structure; soft, very friable, nonsticky and 
nonplastic; many very fine and fine roots; many very 
fine and fine interstitial pores; 10 percent pebbles, 5 
percent cobbles, and 5 percent stones; neutral (pH 
7.0); abrupt smooth boundary.

A2—3 to 7 inches: brown (10YR 5/3) very cobbly loam, 
dark brown (10YR 3/3) moist; moderate medium 
subangular blocky structure; slightly hard, very 
friable, sticky and plastic; common very fine and 
fine roots; many very fine and fine tubular pores; 20 
percent pebbles, 15 percent cobbles, and 5 percent 
stones; neutral (pH 7.2); clear smooth boundary.

Bt1—7 to 15 inches: brown (10YR 5/3) very gravelly 
clay loam, dark brown (10YR 3/3) moist; moderate 
medium angular blocky structure; slightly hard, 
friable, very sticky and very plastic; common fine, 
medium, and coarse roots; common very fine and 
fine tubular pores; common thin and few thick clay 
films on faces of ped; 30 percent pebbles, 5 
percent cobbles, and 5 percent stones; neutral (pH 
7.2); clear wavy boundary.

Bt2—15 to 19 inches: yellowish brown (10YR 5/4) very 
cobbly clay loam, dark yellowish brown (10YR 3/4)
moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few fine, medium, and coarse roots; common very fine tubular pores; common moderately thick clay films on faces of peds; 30 percent pebbles, 15 percent cobbles, and 5 percent stones; mildly alkaline (pH 7.4); abrupt irregular boundary.

R—19 inches; hard, fine, crystalline tuff.

**Typical Pedon Location**

*Soil name and map unit in which located:* Duco stony loam, 15 to 30 percent slopes, in Duco-Clanlispine-Jung association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 38 miles southwest of Austin; in an unsectionalized area about 300 feet north and 1,300 feet east of the southwest corner of the assumed sec. 23, T. 15 N., R. 37 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter, dry in summer and fall

*Average annual soil temperature:* 50 to 53 degrees F

*Mollic epipedon:* 7 to 20 inches thick (commonly includes the upper part of the argillic horizon)

*Combined thickness of the A and Bt horizons:* 10 to 20 inches

*Depth to bedrock:* 10 to 20 inches

*Reaction:* Slightly acid to mildly alkaline

*Control section:*

- Content of clay—27 to 35 percent
- Content of rock fragments—35 to 75 percent, including 30 to 45 percent pebbles, 0 to 20 percent cobbles, and 0 to 40 percent stones (stones generally in the lower part)

*A horizon:*

- Value—4 or 5 dry, 2 or 3 moist
- Chroma—1 to 3
- Structure—weak or moderate, fine or medium, and granular or subangular blocky

*Bt1 horizon:*

- Hue—10YR or 7.5YR
- Value—4 or 5 dry, 2 or 3 moist
- Chroma—2 or 3
- Texture—gravely or very gravelly loam, sandy clay loam, or clay loam
- Structure—subangular blocky or angular blocky

*Bt2 horizon:*

- Hue—10YR or 7.5YR
- Value—4 to 6 dry, 2 to 4 moist
- Chroma—2 to 4
- Structure—moderate or strong, fine or medium, and subangular blocky or angular blocky

**Eastwell Series**

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Old gravelly and cobbly alluvial deposits that include some loess

*Positions on landscape:* Summits and side slopes of fan piedmont remnants

*Slope:* 4 to 15 percent

*Mean annual precipitation:* About 8 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic, shallow Haploxerollic Durorthids

**Typical Pedon**

*A1—0 to 2 inches:* light brownish gray (10YR 6/2) gravelly loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine roots; many fine vesicular pores; 20 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

*A2—2 to 5 inches:* light brownish gray (10YR 6/2) gravelly loam, brown (10YR 4/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common fine roots; 25 percent pebbles; slightly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

*Bw—5 to 10 inches:* light brownish gray (10YR 6/2) very gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common very fine tubular pores; 40 percent pebbles; slightly effervescent; strongly alkaline (pH 9.0); clear wavy boundary.

*Bqk—10 to 15 inches:* pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common very fine tubular pores; 30 percent durinodes; strongly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary.

*Bqkm—15 to 17 inches:* white (10YR 8/2), strongly cemented duripan, pale brown (10YR 6/3) moist; weak very thick platy structure; extremely hard, extremely firm; thin, discontinuous, silica lamellae on top; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

*Bk—17 to 60 inches:* white (10YR 8/2) very gravelly loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; 40 percent pebbles and cobbles; strongly effervescent; strongly alkaline (pH 8.6).
Typical Pedon Location

Soil name and map unit in which located: Eastwell gravelly loam, 4 to 15 percent slopes, in Eastwell-Blackhawk-Pineval association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 0.9 mile west of Red Bird Mine; about 600 feet west and 300 feet south of the northeast corner of sec. 24, T. 22 N., R. 41 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in June through October

Average annual soil temperature: 47 to 52 degrees F

Depth to the duripan: 10 to 20 inches

Control section:

Content of clay—10 to 27 percent
Texture—sandy loam or loam
Content of rock fragments—35 to 50 percent, mainly pebbles

A horizon:

Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Structure—platy, granular, or massive
Effervescence—noneffervescent or slightly effervescent

Bw horizon:

Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Structure—weak or moderate and prismatic or subangular blocky
Effervescence—slightly effervescent to violently effervescent

Bqkm horizon:

Effervescence—strongly effervescent or violently effervescent
Other characteristics—common continuous, strong silica cementation; thin discontinuous silica lamellae absent in some pedons

Bk horizon:

Value—6 to 8 dry, 4 to 6 moist
Chroma—2 to 4
Texture—very gravelly loam or very cobbly loam
Content of rock fragments—35 to 60 percent, mainly pebbles and cobbles
Effervescence—strongly effervescent or violently effervescent
Other characteristics—common lime coatings on the underside of rock fragments; 10 to 40 percent durinodes or discontinuous, weak, lime and silica cementation

Enko Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Loamy alluvium that is derived mainly from various kinds of rock and includes some loess and volcanic ash
Positions on landscape: Fan aprons, fan skirts, inset fans
Slope: 0 to 8 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 48 degrees F

Taxonomic class: Coarse-loamy, mixed, mesic Durixerollic Camborthids

Typical Pedon

A1—0 to 3 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine vesicular pores; 5 percent pebbles; neutral (pH 7.2); abrupt smooth boundary.

A2—3 to 6 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 5 percent pebbles; neutral (pH 7.2); clear smooth boundary.

Bw—6 to 12 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary.

Bq1—12 to 18 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; 40 percent discontinuous, weak, silica cementation and 20 percent strongly cemented durinodes 5 to 15 millimeters in diameter; 5 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

Bq2—18 to 30 inches; light yellowish brown (10YR 6/4), continuous, weakly silica-cemented sandy loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 20 percent strongly cemented durinodes 10 to 25 millimeters in diameter; 10 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.
Bq3—30 to 36 inches; light yellowish brown (2.5Y 6/4) sandy loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; 40 percent strongly cemented durinodes 5 to 25 millimeters in diameter; 10 percent pebbles; moderately alkaline (pH 8.4); clear wavy boundary.

Bq—36 to 60 inches; light yellowish brown (2.5Y 6/4), continuous, weakly silica-cemented fine sandy loam, olive brown (2.5Y 4/4) moist; massive; hard, firm, nonsticky and nonplastic; common very fine and fine roots; few very fine interstitial pores; 10 percent pebbles; many fine lime seams and threads; strongly effervescent; strongly alkaline (pH 8.8).

**Typical Pedon Location**

*Soil name and map unit in which located:* Enko sandy loam, 2 to 4 percent slopes, in Enko-Orovada association, gently sloping

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 6 miles southwest of Austin; about 1,650 feet north and 600 feet west of the southeast corner of sec. 20, T. 18 N., R. 43 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 49 to 52 degrees F

*Combined thickness of the A and Bw horizons:* 12 to 30 inches

*Depth to continuous, weak cementation:* 14 to 30 inches

*Other characteristics:* Sandy strata or strata containing gypsum crystals present below a depth of 40 inches in some pedons; noneffervescent Bq horizon present above the Bqk horizon in some pedons

**Control section:**

- Content of clay—10 to 18 percent
- Content of rock fragments—0 to 15 percent pebbles

*A horizon:*

- Hue—10YR or 2.5Y
- Value—commonly 6 or 7 dry, but 5 dry in some pedons; 3 or 4 moist
- Chroma—2 or 3
- Structure—very fine or fine and granular, very thin to medium and platy, or massive
- Consistence—slightly sticky or sticky, slightly plastic or plastic
- Reaction—neutral to moderately alkaline

*Bw horizon:*

- Value—5 to 7 dry, 3 to 5 moist
- Chroma—2 to 4
- Texture—dominantly loam, fine sandy loam, or

sandy loam, but strata of silt loam or clay loam in the upper part in some pedons

**Structure:** prismatic, angular blocky, subangular blocky, or massive

**Consistence:** slightly sticky or sticky, slightly plastic or plastic

**Reaction:** neutral to moderately alkaline, increasing in alkalinity with increasing depth

**Other characteristics:** calcareous in the lower part in some pedons

**Bqk and Bq horizons (when present):**

- Hue—10YR, 2.5Y, or 5Y
- Value—4 to 6 moist, 6 to 8 dry
- Chroma—1 to 4 dry, 2 to 4 moist
- Texture—loam, sandy loam, or fine sandy loam
- Cementation—common continuous, weakly silica-cemented strata 10 to 40 inches thick, but 20 to 50 percent durinodes or 20 to 75 percent discontinuous, weakly silica-cemented strata in some pedons
- Reaction—mildly alkaline to strongly alkaline, increasing in alkalinity with increasing depth
- Other characteristics—common relict iron mottles or mica particles in many pedons; very gravelly or extremely gravelly strata common below a depth of 40 inches in some pedons

**Fenster Series**

**Depth class:** Very deep

**Drainage class:** Well drained

**Parent material:** Silty alluvium derived from highly calcareous sources

**Positions on landscape:** Stream terraces

**Slope:** 0 to 2 percent

**Mean annual precipitation:** About 10 inches

**Mean annual temperature:** About 45 degrees F

**Taxonomic class:** Fine-silty, mixed (calcareous), frigid Typic Torriorthents

**Typical Pedon**

*A1—0 to 2 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; very few very fine and fine roots; many medium vesicular pores; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

*A2—2 to 5 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; soft, friable, slightly
sticky and slightly plastic; few very fine and fine roots; common very fine interstitial and tubular pores; slightly effervescent; strongly alkaline (pH 9.0); clear smooth boundary.

C1—5 to 10 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate fine and very fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary.

C2—10 to 18 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 4/4) moist; common fine faint yellow (10YR 7/6) mottles, yellowish brown (10YR 5/6) moist; massive; hard, firm, very sticky and very plastic; common very fine and fine roots; common very fine interstitial and tubular pores; violently effervescent; very strongly alkaline (pH 9.4); gradual smooth boundary.

C3—18 to 32 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 4/4) moist; common medium distinct pale yellow (2.5Y 7/4) mottles, light olive brown (2.5Y 5/4) moist; massive; hard, firm, sticky and plastic; common very fine and fine roots; common very fine interstitial and tubular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

2C4—32 to 38 inches; very pale brown (10YR 7/3) very fine sandy loam that is high in content of volcanic ash, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; many very fine interstitial pores; strongly effervescent; strongly alkaline (pH 8.4); abrupt smooth boundary.

3C5—38 to 60 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; violently effervescent; strongly alkaline (pH 8.8).

**Typical Pedon Location**

*Soil name and map unit in which located:* Fenster silt loam in Fenster-Jesse Camp association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 34 miles southeast of Austin; about 200 feet north and 700 feet west of the southeast corner of sec. 2, T. 15 N., R. 47 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 45 to 47 degrees F

**Control section:**

*Content of clay:* 18 to 35 percent

*Reaction:* Moderately alkaline to very strongly alkaline

*Effervescence:* Dominantly strongly effervescent or violently effervescent, but slightly effervescent in the upper part in some pedons

**A horizon:**

*Value:* 6 or 7 dry, 4 or 5 moist

*Chroma:* 2 or 3

**C horizon:**

*Value:* 6 or 7 dry, 4 or 5 moist

*Chroma:* 2 to 4

*Texture:* Dominantly silt loam or silty clay loam, but strata of fine sandy loam or loam at a depth of more than 40 inches or very fine sandy loam

*Volcanic ash at a depth of less than 40 inches in some pedons*

*Other characteristics:* Relict mottles at a depth of less than 40 inches in some pedons

**Fillaran Series**

**Depth class:** Moderately deep to duripan

**Drainage class:** Well drained

**Parent material:** Alluvium that is derived from volcanic and metamorphic rock and includes some loess

**Positions on landscape:** Fan piedmonts

**Slope:** 2 to 4 percent

**Mean annual precipitation:** About 9 inches

**Mean annual temperature:** About 48 degrees F

**Taxonomic class:** Fine, montmorillonitic, mesic

*Haploxerolic Nadurargids*

**Typical Pedon**

About 10 percent of the surface is covered with pebbles.

A1—0 to 3 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.6); abrupt smooth boundary.

A2—3 to 7 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and medium roots; common very fine and medium tubular pores; 5 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.8); abrupt smooth boundary.
E—7 to 9 inches; light brownish gray (10YR 6/2) gravelly silt loam, dark brown (10YR 4/3) moist; weak thick platy structure; hard, friable, slightly sticky and slightly plastic; common very fine and medium roots; common very fine and fine tubular pores; 15 percent pebbles and 5 percent cobbles; 20 percent bleached white (10YR 8/2) faces of ped; moderately alkaline (pH 8.0); abrupt wavy boundary.

E/B—9 to 12 inches; pale brown (10YR 6/3) gravelly silt loam, dark brown (10YR 3/3) moist; strong fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; common thick clay films on faces of ped; 15 percent pebbles and 5 percent cobbles; 60 percent bleached white (10YR 8/2) faces of ped; moderately alkaline (pH 8.4); abrupt wavy boundary.

2Bn—12 to 20 inches; light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many thick clay films on faces of ped and in pores; 5 percent pebbles; slightly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.

2Bnk—20 to 28 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many thick clay films on faces of ped and in pores; 20 percent pebbles; common lime coatings on the underside of rock fragments; common medium threads and filaments of lime; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

2Bnky—28 to 33 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; common thick clay films on faces of ped and in pores; 20 percent discontinuous, weak, silica cementation; 25 percent pebbles and 5 percent cobbles; many medium filaments of lime; common medium soft gypsum masses; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

2Bqkm—33 to 60 inches; pale brown (10YR 6/3), strongly cemented duripan, dark brown (10YR 4/3) moist; massive; very hard, very firm; disseminated lime; violently effervescent; strongly alkaline (pH 8.8).

Typical Pedon Location

Soil name and map unit in which located: Filiran silt loam, 2 to 4 percent slopes, in Filiran-Pineval-Kingingham association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 25 miles north of Austin; about 2,000 feet north and 150 feet west of the southeast corner of sec. 16, T. 23 N., R. 44 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in mid-June through October

Average annual soil temperature: 47 to 52 degrees F

Depth to the duripan: 20 to 40 inches

Depth to carbonates: 12 to 25 inches

Control section:
- Content of clay—35 to 50 percent
- Content of rock fragments—5 to 20 percent when mixed, mainly pebbles

A horizon:
- Value—3 or 4 moist
- Chroma—2 or 3

E horizon:
- Value—3 or 4 moist
- Chroma—2 or 3

Structure—platy, subangular blocky, or prismatic

Other characteristics—15 to 60 percent of the faces of ped are bleached

Btn horizon:
- Hue—10YR or 2.5Y
- Value—4 to 6 dry, 3 to 5 moist
- Chroma—3 or 4

Texture—clay, gravelly clay, silty clay, clay loam, or silty clay loam

Content of exchangeable sodium: 15 to 35 percent

Effervescence—noneffervescent or slightly effervescent in the upper part, strongly effervescent or violently effervescent in the lower part

Reaction—strongly alkaline or very strongly alkaline

Fortank Series

Depth class: Moderately deep

Drainage class: Well drained

Parent material: Residuum derived from rhyolitic tuff

Positions on landscape: Side slopes of mountains

Slope: 4 to 8 percent

Mean annual precipitation: About 9 inches

Mean annual temperature: About 44 degrees F
Taxonomic class: Fine, montmorillonitic, frigid Xerolic Haplargids

Typical Pedon

About 40 percent of the surface is covered with pebbles, 15 percent with cobbles, and 10 percent with stones.

A1—0 to 3 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; soft, very friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and few medium tubular pores and few fine vesicular pores; 20 percent pebbles; mildly alkaline (pH 7.6); abrupt smooth boundary.

A2—3 to 6 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; 25 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.

Bt1—6 to 11 inches; brown (10YR 5/3) gravelly clay loam, brown (10YR 4/3) moist; moderate medium angular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; 20 percent pebbles and 10 percent cobbles; common thin and few moderately thick clay films on faces of pedds and lining pores; moderately alkaline (pH 7.9); clear smooth boundary.

Bt2—11 to 19 inches; brown (10YR 5/3) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, friable, very sticky and very plastic; few very fine, fine, and medium roots; common very fine and fine and few medium tubular pores; 20 percent pebbles and 10 percent cobbles; many moderately thick clay films on faces of pedds and lining pores; moderately alkaline (pH 7.9); clear smooth boundary.

Btk—19 to 30 inches; light brown (7.5YR 6/4) gravelly clay, brown (7.5YR 4/4) moist; moderate medium angular blocky structure; hard, friable, very sticky and very plastic; few fine and medium roots; common medium and few very fine and fine tubular pores; 30 percent pebbles; many moderately thick clay films on faces of pedds and lining pores; few fine filaments and threads of lime; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Cr—30 inches; weathered, rhyolitic tuff.

Typical Pedon Location

Map unit in which located: Fortank gravelly loam, 4 to 8 percent slopes

Location in Nevada: Lander County, Nevada, South Part, survey area; about 18 miles east of Austin; about 900 feet south and 1,600 feet west of the northeast corner of sec. 29, T. 21 N., R. 48 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in mid-June through October

Average annual soil temperature: 45 to 47 degrees F

Thickness of the solum and depth to bedrock: 30 to 40 inches

Control section:

Texture—gravelly clay loam or gravelly clay
Content of clay—35 to 45 percent
Content of rock fragments—15 to 35 percent, dominantly pebbles

A horizon:

Value—3 or 4 moist
Structure—weak or moderate, very thin to thick, and platy; or weak or moderate, very fine to coarse, and subangular blocky
Reaction—mildly alkaline or moderately alkaline

Bt horizon:

Hue—7.5YR or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4
Structure—weak or moderate and angular blocky or prismatic

Gando Series

Depth class: Shallow
Drainage class: Well drained
Parent material: Residuum derived from mixed sedimentary rock

Positions on landscape: Crests and side slopes of mountains
Slope: 15 to 75 percent

Mean annual precipitation: About 16 inches
Mean annual temperature: About 42 degrees F

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Haploxerolls

Typical Pedon

About 20 percent of the surface is covered with pebbles and 10 percent with cobbles.

A1—0 to 4 inches; grayish brown (10YR 5/2) very
gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft,
very friable, slightly sticky and slightly plastic;
common very fine roots; few very fine tubular pores;
35 percent pebbles and 5 percent cobbles; mildly
alkaline (pH 7.4); clear smooth boundary.
A2—4 to 8 inches; brown (10YR 5/3) very gravelly
loam, dark brown (10YR 3/3) moist; moderate very
fine granular structure; soft, very friable, slightly
sticky and slightly plastic; many very fine roots; few
very fine tubular pores; 40 percent pebbles and 10
percent cobbles; mildly alkaline (pH 7.4); clear wavy
boundary.
Bk—8 to 10 inches; brown (10YR 5/3) extremely
gravelly loam, dark brown (10YR 3/3) moist;
moderate very fine granular structure; soft, very
friable, slightly sticky and slightly plastic; common
very fine roots; few very fine tubular pores; 60
percent pebbles and 10 percent cobbles; common
thin strongly effervescent lime coatings on the
underside of coarse fragments; slightly effervescent
in matrix; mildly alkaline (pH 7.4); abrupt wavy
boundary.
R—10 inches; hard shale.

Typical Pedon Location

Soil name and map unit in which located: Gando stony
loam, 15 to 30 percent slopes, in Loncan-Gando-
Glean association

Location in Nevada: Lander County, Nevada, South
Part, survey area; about 22 miles northeast of
Austin; about 1,000 feet south and 2,200 feet east
of the northwest corner of sec. 5, T. 22 N., R. 48 E.

Range in Characteristics

Soil moisture content: Moist in winter to early in
summer, dry early in July to mid-October
Average annual soil temperature: 43 to 46 degrees F
Thickness of the mollic epipedon: 7 to 14 inches
Depth to bedrock: 10 to 20 inches
Depth to carbonates: 7 to 14 inches

Control section:

Content of clay—10 to 18 percent
Content of rock fragments—50 to 70 percent,
mainly pebbles
Reaction—mildly alkaline or moderately alkaline,
commonly increasing in alkalinity with
increasing depth

A horizon:

Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3
Structure—moderate, very fine to medium, and
granular; weak or moderate, very thin to
medium, and platy; or weak, very fine, and
angular blocky to moderate, medium, and
subangular blocky
Consistence—soft or slightly hard (dry), slightly
sticky or sticky and nonplastic or plastic (moist)

Bk horizon:

Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4
Structure—subangular blocky, granular, or massive
Consistence—soft or slightly hard (dry), slightly
sticky or sticky and slightly plastic or plastic
(moist)
Texture—extremely gravelly loam, extremely
gravelly sandy loam, or very gravelly loam
Content of rock fragments—50 to 70 percent,
mainly pebbles but as much as 20 percent
cobbles
Effervescence—slightly effervescent or strongly
effervescent

Genaw Series

Depth class: Shallow
Drainage class: Well drained
Parent material: Mantle of loess over residuum derived
from tuffaceous sediment
Positions on landscape: Rolling hills, rock pediments
Slope: 4 to 30 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 46 degrees F

Taxonomic class: Loamy, mixed, mesic, shallow
Xerollic Hapludalfs

Typical Pedon

About 5 percent of the surface is covered with pebbles
and 5 percent with cobbles.
A1—0 to 3 inches; pale brown (10YR 6/3) very fine
sandy loam, dark brown (10YR 4/3) moist; weak
thick platy structure; slightly hard, very friable,
slightly sticky and nonplastic; few very fine and fine
roots; many very fine and fine vesicular pores;
moderately alkaline (pH 8.0); abrupt smooth
boundary.
A2—3 to 6 inches; brown (10YR 5/3) gravelly very fine
sandy loam, dark brown (10YR 4/3) moist;
moderate medium subangular blocky structure;
slightly hard, very friable, slightly sticky and
nonplastic; common very fine, fine, and medium
roots; common fine and medium tubular and
interstitial pores; 15 percent pebbles; moderately
alkaline (pH 8.2); clear smooth boundary.
Btk—6 to 11 inches; yellowish brown (10YR 5/4)
gravelly clay loam, dark yellowish brown (10YR 4/4)
moist; moderate medium angular blocky structure; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium roots; few very fine tubular pores; common fine and medium clay films on faces of peds and lining pores; 20 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bkq—11 to 16 inches; very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; common fine and medium roots; few very fine tubular pores; 35 percent pebbles; common fine and medium lime filaments; 10 percent weak durinodes; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Cr—16 inches; soft, tuffaceous sediment.

**Typical Pedon Location**

*Soil name and map unit in which located:* Genaw very fine sandy loam, 4 to 15 percent slopes, in Genaw-Parlor-Puett association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 26 miles southwest of Battle Mountain; about 800 feet north and 2,400 feet west of the southeast corner of sec. 6, T. 27 N., R. 42 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in June through November

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to paralithic contact:* 14 to 20 inches

**A horizon:**
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3

**Bt horizon:**
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—3 or 4
- Texture—loam or clay loam
- Content of rock fragments—15 to 35 percent, mainly pebbles
- Content of clay—18 to 30 percent

**Bkq horizon:**
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—sandy loam or loam
- Content of rock fragments—25 to 50 percent, mainly pebbles
- Reaction—moderately alkaline or strongly alkaline
- Other characteristics—5 to 15 percent discontinuous weak cementation or weakly cemented durinodes

**Glean Series**

*Depth class:* Deep

*Drainage class:* Well drained

*Parent material:* Colluvium and residuum derived from various kinds of rock

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 75 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Pachic Haploxerolls

**Typical Pedon**

About 20 percent of the surface is covered with pebbles and 1 percent with stones.

A1—0 to 6 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate medium platy structure parting to moderate medium subangular blocky; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 30 percent pebbles; neutral (pH 7.0); abrupt smooth boundary.

A2—6 to 19 inches; very dark grayish brown (10YR 3/2) very gravelly loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine tubular pores; 35 percent pebbles; neutral (pH 7.0); clear wavy boundary.

AC—19 to 31 inches; dark brown (10YR 4/3) very gravelly loam, very dark brown (10YR 2/2) moist; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine tubular pores; 35 percent pebbles and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.

C—31 to 49 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; few very fine tubular pores; 35 percent pebbles and 10 percent cobbles; neutral (pH 7.2); abrupt smooth boundary.

2R—49 inches; hard, altered andesite.

**Typical Pedon Location**

*Soil name and map unit in which located:* Glean gravelly loam, 30 to 50 percent slopes, in Glean-Walti-Cleavage association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 24 miles south of Battle
Mountain; about 1,500 feet south and 500 feet east of the northwest corner of sec. 29, T. 28 N., R. 45 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in November to mid-July
Average annual soil temperature: 43 to 47 degrees F
Thickness of the mollic epipedon: 22 to 34 inches
Depth to bedrock: 40 to 60 inches

Control section:
Texture—very gravelly or very cobbly sandy loam or loam
Content of rock fragments—40 to 70 percent, mainly pebbles and cobbles
Reaction—slightly acid or neutral

A horizon:
Value—4 or 5 dry
Chroma—2 or 3

C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—5 or 6 dry, 4 or 5 moist
Chroma—2 to 4

Glyphs Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Mixed alluvium that is derived mainly from volcanic rock and includes some loess and volcanic ash
Positions on landscape: Fan piedmont remnants
Slope: 0 to 30 percent
Mean annual precipitation: About 10 inches
Mean annual temperature: About 45 degrees F
Taxonomic class: Fine-loamy, mixed, mesic Durixerollic Haplorgids

Typical Pedon

About 40 percent of the surface is covered with pebbles.
A1—0 to 4 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, nonsticky and slightly plastic; few fine roots; many fine and medium vesicular pores; 5 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.
A2—4 to 7 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine roots and few very fine and medium roots; common fine and medium vesicular and interstitial pores; 10 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.
Bt—7 to 12 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine roots and few very fine and medium roots; few fine interstitial pores; many moderately thick clay films on peds and in pores; 20 percent pebbles; moderately alkaline (pH 8.0); clear wavy boundary.
Btk—12 to 17 inches; light yellowish brown (10YR 6/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few medium tubular pores; common thin clay films on peds; lime coatings on the underside of rock fragments; 20 percent pebbles; moderately alkaline (pH 7.9); gradual wavy boundary.
Bqk1—17 to 37 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; massive; hard, firm, nonsticky and nonplastic; few very fine and fine roots; common fine filaments of lime; 30 percent pebbles; continuous weak silica cementation; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.
2Bqk2—37 to 60 inches; pale brown (10YR 6/3) very gravelly coarse sand, brown (10YR 4/3) moist; single grain; hard, firm, nonsticky and nonplastic; few very fine and fine roots; lime coatings on the underside of rock fragments; 40 percent pebbles; continuous weak silica cementation; moderately alkaline (pH 8.0).

Typical Pedon Location

Soil name and map unit in which located: Glyphs fine sandy loam, 2 to 8 percent slopes, in Glyphs-Municipal-Orovada association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 18 miles east of Austin, in the Monitor Valley; about 500 feet north and 1,580 feet east of the southeast corner of sec. 17, T. 19 N., R. 47 E.

Range in Characteristics

Soil moisture content: Moist in some part from October to mid-June, dry in summer and early in fall
Average annual soil temperature: 47 to 52 degrees F
Depth to the Bqk horizon: 12 to 20 inches
Other characteristics: Base of continuous, weak, silica cementation at a depth of 36 to more than 60 inches
Control section:
Content of clay—20 to 35 percent
Content of rock fragments—15 to 30 percent pebbles, 0 to 5 percent cobbles
Reaction—mildly alkaline to strongly alkaline

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—2 to 4
Content of rock fragments—10 to 30 percent pebbles, 0 to 5 percent cobbles

Btk horizon:
Effervescence—noneffervescent or slightly effervescence in matrix
Other characteristics—few to many lime filaments or lime coatings on the underside of rock fragments

Bqk horizon:
Content of rock fragments—15 to 45 percent pebbles, 0 to 5 percent cobbles
Other characteristics—common, continuous, weak cementation; thin strata that are 30 to 60 percent durinodes in a friable matrix in some pedons

Granzan Series

Depth class: Deep
Drainage class: Well drained
Parent material: Residuum and colluvium derived from limestone and calcareous shale
Positions on landscape: Side slopes of mountains
Slope: 30 to 50 percent
Mean annual precipitation: About 16 inches
Mean annual temperature: About 43 degrees F
Taxonomic class: Loamy-skeletal, carbonatic, frigid Typic Calcixerolls

Typical Pedon

About 35 percent of the surface is covered with pebbles and 35 percent with cobbles.

A1—0 to 4 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; weak medium and fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine interstitial pores; 25 percent pebbles and 20 percent cobbles; strongly effervescent; mildly alkaline (pH 7.6); clear smooth boundary.

A2—4 to 12 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine interstitial pores; 45 percent pebbles and 5 percent cobbles; common thin lime coatings on the underside of rock fragments; strongly effervescent; mildly alkaline (pH 7.8); clear wavy boundary.

Bk1—12 to 29 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine, fine, and medium roots; common very fine tubular pores; 50 percent pebbles and 5 percent cobbles; common thin to thick lime coatings and pendants on rock fragments; violently effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

Bk2—29 to 43 inches; light yellowish brown (10YR 6/4) extremely gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; few very fine tubular pores; 55 percent pebbles and 10 percent cobbles; common thick lime coatings and pendants on rock fragments; violently effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

2R—43 inches; highly fractured limestone.

Typical Pedon Location

Soil name and map unit in which located: Granzan very cobbly loam, 30 to 50 percent slopes, in Halacan-Hapgood-Granzan association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 15 miles north of Austin; about 900 feet west and 2,000 feet north of the southeast corner of sec. 36, T. 21 N., R. 44 E.

Range in Characteristics

Soil moisture content: Usually moist, but dry in mid-July to September
Average annual soil temperature: 43 to 47 degrees F
Thickness of the mollic epipedon: 11 to 19 inches
Depth to bedrock: 40 to 60 inches

Control section:
Content of clay—18 to 27 percent
Content of rock fragments—35 to 60 percent when mixed, dominantly pebbles but as much as 15 percent cobbles
Reaction—mildly alkaline or moderately alkaline
Calcium carbonate equivalent—40 to 50 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—weak or moderate, fine or medium, and granular or subangular blocky
Effervescence—slightly effervescent to violently effervescent
Bk horizon:
Value—6 or 7 dry, 3 or 4 moist
Chroma—3 or 4
Texture—dominantly very gravelly loam or very gravelly silt loam, but extremely gravelly loam in the lower part in some pedons
Effervescence—strongly effervescent or violently effervescent

Grassval Series

Depth class: Very shallow or shallow to duripan
Drainage class: Well drained
Parent material: Alluvium derived from various kinds of rock
Positions on landscape: Fan piedmont remnants
Slope: 2 to 15 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 46 degrees F
Taxonomic class: Loamy, mixed, mesic, shallow
Xerolic Durargids

Typical Pedon

About 10 percent of the surface is covered with pebbles.

A—0 to 4 inches; light brownish gray (10YR 6/2) fine sandy loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; few fine and very fine roots; few medium and many fine vesicular pores; 10 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bt—4 to 10 inches; pale brown (10YR 6/3) gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few medium and coarse roots and common fine roots; common fine and very fine tubular pores; common thin clay films on peads; 20 percent pebbles and 5 percent cobbles; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Btk—10 to 13 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium and coarse subangular blocky structure; hard, friable, sticky and plastic; common fine roots; common fine tubular pores; common thin clay films on faces of peads; 20 percent pebbles and 5 percent cobbles; lime coatings on the underside of pebbles and many fine and medium soft lime masses; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary.

Bqkm—13 to 60 inches; white (10YR 8/1), indurated duripan and thin horizontal lenses that are weakly or strongly cemented; violently effervescent.

Typical Pedon Location

Soil name and map unit in which located: Grassval fine sandy loam, 8 to 15 percent slopes, in Grassval-Oxcorel association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 10 miles east of Austin, in the northern part of the Big Smoky Valley; about 1,950 feet north and 1,900 feet west of the southeast corner of sec. 25, T. 19 N., R. 45 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry early in June through October
Average annual soil temperature: 47 to 50 degrees F
Thickness of the solum and depth to the duripan: 8 to 14 inches
Other characteristics: Calcareous throughout; effervescence increasing with increasing depth; segregated lime common in the lower part of the solum

Control section:
Content of clay—18 to 27 percent
Content of rock fragments—15 to 35 percent, mainly pebbles

A horizon:
Value—3 or 4 moist
Chroma—2 or 3
Reaction—mildly alkaline or moderately alkaline

Bt horizon:
Value—4 or 5 moist
Chroma—3 or 4
Texture—gravelly loam or gravelly clay loam
Content of clay—25 to 35 percent
Structure—prismatic or subangular blocky
Reaction—moderately alkaline or strongly alkaline

Grina Series

Depth class: Shallow
Drainage class: Well drained
Parent material: Residuum derived from soft sedimentary rock
Positions on landscape: Low, rolling hills
Slope: 15 to 50 percent
Mean annual precipitation: About 10 inches
Mean annual temperature: About 48 degrees F
Taxonomic class: Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents

Typical Pedon

About 40 percent of the surface is covered with pebbles.

A1—0 to 3 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine vesicular and tubular pores; 20 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

A2—3 to 5 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; few fine tubular pores and many fine interstitial pores; 10 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

A3—5 to 11 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; 10 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

C—11 to 15 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; massive; soft, friable, slightly sticky and slightly plastic; common fine interstitial pores; 10 percent pebbles; violently effervescent; moderately alkaline (pH 8.4); clear irregular boundary.

Cr—15 inches; soft, tuffaceous sediment; fractures 5 to 10 inches apart.

Typical Pedon Location

Soil name and map unit in which located: Grina gravelly loam, 15 to 30 percent slopes, in Grina-Grina, eroded-Caniwe association

Location in Nevada: Lander County, Nevada, North Part, survey area; about 1,400 feet north and 1,300 feet east of the southwest corner of sec. 8, T. 25 N., R. 48 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in mid-June through October

Average annual soil temperature: 47 to 52 degrees F

Depth to paralithic contact: 14 to 20 inches

Calcium carbonate equivalent: 20 to 40 percent of the fraction less than 20 millimeters

Other characteristics: Thin Bk horizon above the paralithic contact in some pedons

Control section:

Texture—loam, silt loam, or silty clay loam

Content of clay—20 to 35 percent when mixed

Content of rock fragments—0 to 15 percent when mixed

A horizon:

Hue—10YR or 2.5Y

Value—5 or 6 dry, 3 or 4 moist

Structure—very fine or fine and granular, very thin to very thick and platy, or very fine to very coarse and subangular blocky

Consistence—soft to hard (dry), very friable or friable (moist), slightly sticky or sticky and slightly plastic or plastic (wet)

C horizon:

Hue—10YR or 2.5Y

Value—6 to 8 dry, 5 to 7 moist

Chroma—2 to 4

Structure—weak or moderate, very fine to medium and subangular blocky, very fine or fine and angular blocky, or very thin to thick and platy; or massive

Effervescence—strongly effervescent or violently effervescent

Cr horizon:

Hue—10YR to 5Y

Value—7 or 8 dry, 5 to 7 moist

Chroma—2 or 3

Consistence—hard to extremely hard (dry), firm to very firm (moist)

Other characteristics—precipitated lime or gypsum in filaments or threads and iron-manganese stains common along fracture planes

Gund Series

Depth class: Very deep

Drainage class: Somewhat poorly drained

Parent material: Silty alluvium derived mainly from loess, volcanic ash, and various kinds of rock over lacustrine sediment

Positions on landscape: Lake plains, lake plain remnants, alluvial flat remnants

Slope: 0 to 2 percent

Mean annual precipitation: About 8 inches

Mean annual temperature: About 47 degrees F

Taxonomic class: Fine-silty over clayey, mixed, nonacid, mesic Aquic Durorthidic Torriorthents

Typical Pedon

A—0 to 4 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate thin and medium
platy structure; soft, very friable, sticky and slightly plastic; common very fine and fine roots; many very fine interstitial and vesicular pores; strongly alkaline (pH 8.7); gradual smooth boundary.

Cq1—4 to 14 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin and medium platy structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; 40 percent discontinuous weak silica cementation; strongly alkaline (pH 9.0); gradual smooth boundary.

Cq2—14 to 23 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; moderate thin and medium platy structure; hard, firm, slightly sticky and nonplastic; brittle; few very fine, fine, medium, and coarse roots; common very fine tubular pores; continuous weak silica cementation; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

2C—23 to 38 inches; light gray (2.5Y 7/2) clay, light brownish gray (2.5Y 6/2) moist; common medium distinct mottles that are olive yellow (2.5Y 6/6) moist; strong medium prismatic structure; hard, friable, sticky and very plastic; few very fine, fine, and medium roots; many very fine and fine interstitial and tubular pores; continuous moderately thick pressure faces; 60 percent of faces of peds, pores, and root channels coated with reddish brown (5YR 4/4) iron and manganese stains; strongly effervescent; strongly alkaline (pH 8.9); clear wavy boundary.

2Cy—38 to 60 inches; pale yellow (5Y 7/3) silty clay, light olive gray (5Y 6/2) moist; many medium distinct mottles that are olive yellow (2.5Y 6/6) moist; massive; hard, friable, very sticky and plastic; few very fine roots; many very fine tubular pores; common fine white (10YR 8/1) gypsum crystals; strongly effervescent; strongly alkaline (pH 9.0).

**Typical Pedon Location**

*Soil name and map unit in which located:* Gund silt loam in Gund-Umberland association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 55 miles southeast of Battle Mountain; about 1,600 feet north and 1,260 feet west of the southeast corner of sec. 19, T. 23 N., R. 48 E.

**Range in Characteristics**

*Soil moisture content:* Usually moist in some part of the moisture control section in October through July; usually dry in August and September

*Depth to an apparent seasonal high water table:* 36 to 42 inches late in winter to early in summer

**Average annual soil temperature:** 47 to 52 degrees F

**Depth to weak silica cementation:** 3 to 6 inches

**Depth to unconformable lacustrine sediment:** 15 to 30 inches

**Reaction:** Moderately alkaline or strongly alkaline

**Other characteristics:** Thin A2 horizon or 2Cg horizon in some pedons

**Control section:**

*Texture—silt loam in the upper part, silty clay or clay in the lower part*

*Content of clay—averages 18 to 25 percent in the upper part and 45 to 60 percent in the lower part*

*2C horizon:*

*Value—6 or 7 dry, 3 to 5 moist*

*Chroma—2 or 3*

*Effervescence—commonly non-effervescent, but slightly effervescent in some pedons*

*Other characteristics—strongly affected by salt and sodium, decreasing in degree with increasing depth*

*2C horizon:*

*Value—6 or 7 dry, 4 to 6 moist*

*Chroma—3 or 4*

*Effervescence—commonly non-effervescent, but ranges to strongly effervescent*

*Other characteristics—30 to 60 percent discontinuous, weak, silica cementation in the upper part; continuous, weak, silica cementation in the lower part*

**Hackwood Series**

**Depth class:** Very deep

**Drainage class:** Moderately well drained

**Parent material:** Alluvium and colluvium that are derived from volcanic rock and include some loess

**Positions on landscape:** Concave side slopes of mountains

**Slope:** 15 to 30 percent
Mean annual precipitation: About 18 inches
Mean annual temperature: About 41 degrees F

Taxonomic class: Fine-loamy, mixed Pachic Cryoborolls

Typical Pedon

About 5 percent of the surface is covered with stones and 20 percent with boulders.

O—1 inch to 0; aspen litter.

A1—0 to 6 inches; dark gray (10YR 4/1) gravelly loam, black (10YR 2/1) moist; moderate very fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine interstitial pores; 10 percent pebbles and 5 percent cobbles; slightly acid (pH 6.4); clear wavy boundary.

A2—6 to 18 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; common medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine, medium, and coarse roots; common fine and medium interstitial and tubular pores; 15 percent pebbles and 5 percent cobbles; slightly acid (pH 6.2); gradual irregular boundary.

A3—18 to 32 inches; grayish brown (10YR 5/2) gravelly loam, very dark brown (10YR 2/2) moist; common coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine, medium, and coarse roots; common fine tubular pores: 20 percent pebbles and 5 percent stones; slightly acid (pH 6.2); gradual wavy boundary.

2C—32 to 60 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; few very thin silt coatings in pores; 30 percent pebbles, 5 percent cobbles, and 5 percent stones; slightly acid (pH 6.2).

Typical Pedon Location

Soil name and map unit in which located: Hackwood gravelly loam, 15 to 30 percent slopes, rubbly, in Hackwood-Newlands-Hapgood association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 15 miles northeast of Austin; about 1,650 feet east and 3,150 feet south of the northwest corner of sec. 26, T. 20 N., R. 46 E.

Range in Characteristics

Soil moisture content: Moist late in fall to summer; dry in September and October
Average annual soil temperature: 38 to 44 degrees F

Average summer soil temperature: 43 to 47 degrees F

Thickness of the mollic epipedon: 16 to 35 inches

Depth to the 2C horizon: 30 to 49 inches

Other characteristics: Moisture in the lower part of the control section or the lower part of the profile supplied by the lateral movement of water

Control section:

Texture—dominantly silt loam, gravelly silt loam, or gravelly loam, but commonly very gravelly loam to very gravelly silty clay loam in the lower part

Content of clay—averages 18 to 30 percent

Content of rock fragments—averages 15 to 35 percent, mainly pebbles

Reaction—neutral or slightly acid, decreasing in acidity with increasing depth

A horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry, 1 or 2 moist
Structure—platy, granular, or subangular blocky

C horizon:

Hue—2.5Y or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

Other characteristics (lower part of horizon)—pores lined with very thin silt coatings or uncoated sand grains; few fine distinct (10YR 5/6 dry, 10YR 4/4 moist) mottles in some pedons; few manganese stains coating pebbles and lining pores in some pedons

Halacan Series

Depth class: Shallow
Drainage class: Well drained
Parent material: Residuum derived from limestone
Positions on landscape: Side slopes and crests of mountains
Slope: 8 to 50 percent

Mean annual precipitation: About 16 inches
Mean annual temperature: About 38 degrees F

Taxonomic class: Loamy-skeletal, carbonatic Cryic Lithic Rendolls

Typical Pedon

About 50 percent of the surface is covered with pebbles.

A1—0 to 5 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and fine interstitial pores; thick lime coatings and
pendants on the underside of rock fragments; 40 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

A2—5 to 11 inches; brown (10YR 5/3) extremely channery loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine and medium roots; common fine tubular pores; thick lime coatings and pendants on the underside of rock fragments; 45 percent channers and 15 percent flagstones; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bk—11 to 17 inches; brown (10YR 5/3) extremely channery loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common fine tubular and interstitial pores; thick continuous lime coatings and pendants on the underside of rock fragments; 45 percent channers and 30 percent flagstones; violently effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

R—17 inches; hard, fractured limestone.

Typical Pedon Location

Soil name and map unit in which located: Halacan very gravelly loam, 30 to 50 percent slopes, in Halacan-Hatur-Rock outcrop association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 17 miles north of Austin, on Mount Callaghan; about 1,400 feet north and 2,300 feet west of the southeast corner of sec. 1, T. 21 N., R. 44 E.

Range in Characteristics

Soil moisture content: Dry late in summer and early in fall, moist in winter and spring and early in summer

Average annual soil temperature: 37 to 42 degrees F

Mean summer soil temperature: 50 to 59 degrees F

Depth to bedrock: 10 to 20 inches

Thickness of the mollic epipedon: 7 to 11 inches

Calcium carbonate equivalent: 40 to 60 percent

Control section:

Content of clay—10 to 18 percent
Content of rock fragments—50 to 80 percent, mainly channers

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3

Reaction—moderately alkaline or strongly alkaline

Handy Series

Depth class: Very deep

Drainage class: Well drained

Parent material: Alluvium derived dominantly from igneous rock and some limestone and dolostone

Positions on landscape: Fan piedmonts

Slope: 4 to 30 percent

Mean annual precipitation: About 11 inches

Mean annual temperature: About 44 degrees F

Taxonomic class: Fine, montmorillonitic, frigid Xerolic Haplargids

Typical Pedon

About 20 percent of the surface is covered with pebbles.

A1—0 to 3 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common fine vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary.

A2—3 to 6 inches; light brownish gray (10YR 6/2) fine sandy loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few fine tubular pores; 10 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary.

B—6 to 9 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 4/3) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine and fine roots; common fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.

Bt—9 to 17 inches; brown (10YR 5/3) clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; extremely hard, very firm, very sticky and very plastic; few fine roots; few fine tubular pores; many thick clay films on peds; 10 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary.

Btk1—17 to 23 inches; brown (10YR 5/3) clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; very hard, very firm, very sticky and very plastic; few fine roots; few fine tubular pores; many thick clay films on peds; 10
percent pebbles; few seams of lime; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Btk2—23 to 38 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; few fine tubular pores; few moderately thick clay films on pedds; 20 percent pebbles; many seams of lime; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk—38 to 60 inches; very pale brown (10YR 7/3) gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; very few fine tubular pores; common very fine very dark gray (10YR 3/1) manganese stains; 25 percent pebbles; common seams of lime; strongly effervescent; moderately alkaline (pH 8.2).

**Typical Pedon Location**

*Soil name and map unit in which located:* Handy loam, 4 to 8 percent slopes, in Handy-Canjwriter-Zoesta association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 40 miles south of Battle Mountain; about 350 feet south and 2,000 feet west of the northeast corner of sec. 29, T. 25 N., R. 46 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 45 to 47 degrees F

*Depth to lime accumulation:* 12 to 17 inches

*Depth to the Bk horizon:* 20 to 40 inches

*Control section:*

  - Content of clay—40 to 50 percent
  - Content of rock fragments—0 to 30 percent, mainly pebbles

*A horizon:*

  - Value—4 to 6 dry (value of more than 5.5 occurs when the upper 7 inches is mixed); 3 or 4 moist
  - Chroma—2 or 3
  - Structure—granular, or thin to thick and platy
  - Reaction—neutral or mildly alkaline

*A and Btk horizons:*

  - Hue—dominantly 10YR or 7.5YR, but 5YR in some pedons
  - Value—5 or 6 dry, 4 or 5 moist
  - Chroma—2 to 4
  - Texture—clay or gravelly clay
  - Structure—moderate or strong and angular blocky or prismatic

*Reaction—neutral to moderately alkaline, commonly increasing in alkalinity with increasing depth

*Bk horizon:*

  - Texture—stratified gravelly loam to very gravelly loamy sand
  - Content of rock fragments—25 to 60 percent, mainly pebbles
  - Effervescence—strongly effervescent or violently effervescent
  - Reaction—moderately alkaline or strongly alkaline

**Hapgood Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Colluvium that is derived from volcanic rock and includes some volcanic ash

*Positions on landscape:* Side slopes of mountains

*Slope:* 2 to 75 percent

*Mean annual precipitation:* About 16 inches

*Mean annual temperature:* About 42 degrees F

*Taxonomic class:* Loamy-skeletal, mixed Pachic Cryoborolls

**Typical Pedon**

About 10 percent of the surface is covered with pebbles.

*A1—0 to 7 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable, slightly sticky and plastic; many very fine and fine roots and few medium and coarse roots; many very fine interstitial pores; 20 percent pebbles; neutral (pH 6.8); diffuse wavy boundary.

*A2—7 to 17 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate coarse subangular blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and plastic; many very fine and fine roots and few medium and coarse roots; many very fine interstitial pores; 15 percent pebbles and 5 percent cobbles; neutral (pH 6.8); gradual wavy boundary.

*A3—17 to 33 inches: brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine interstitial pores; 30 percent pebbles and 15 percent cobbles; neutral (pH 6.8); gradual wavy boundary.
AC—33 to 40 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 4/3) moist; moderate coarse subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; few very fine and fine interstitial pores; 30 percent pebbles and 15 percent cobbles; neutral (pH 6.8); clear wavy boundary.

C—40 to 60 inches; light yellowish brown (10YR 6/4) very cobbly loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, sticky and plastic; few fine interstitial pores; 15 percent pebbles, 30 percent cobbles, and 10 percent stones; neutral (pH 7.2).

**Typical Pedon Location**

*Soil name and map unit in which located:* Hapgood gravelly loam, 30 to 50 percent slopes, in Newlands-Packer-Hapgood association, moderately steep

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 19 miles north of Austin; about 1,300 feet west and 2,280 feet north of the southeast corner of sec. 15, T. 20 N., R. 46 E.

**Range In Characteristics**

*Soil moisture content:* Moist in winter and spring, dry late in July to early in October

*Mean annual soil temperature:* 38 to 47 degrees F

*Mean summer soil temperature:* 55 to 59 degrees F

*Thickness of the mollic epipedon:* 16 to 60 inches

*Depth to bedrock:* 40 to more than 80 inches

*Reaction:* Slightly acid or neutral

**Control section:**

- Texture—dominantly loam, but includes strata of fine sandy loam, sandy loam, silt loam, or clay loam
- Content of clay—18 to 27 percent
- Content of rock fragments—35 to 50 percent, dominantly pebbles

**A horizon:**

- Value—2 to 5 dry, 2 or 3 moist
- Chroma—1 to 3 in most pedons (chroma of 1 common only in A1 horizon and chroma of 3 common only in or below A3 horizon)
- Structure—platy, subangular blocky, granular, or massive
- Base saturation—50 to 75 percent in the upper part

**C horizon:**

- Hue—10YR or 7.5YR
- Value—4 to 7 dry, 3 to 5 moist
- Chroma—2 to 6
- Other characteristics: C horizon absent in areas where the mollic epipedon overlies bedrock at a depth of less than 48 inches

**Hatur Series**

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from limestone and dolostone

*Positions on landscape:* Side slopes of mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 16 inches

*Mean annual temperature:* About 42 degrees F

*Taxonomic class:* Loamy-skeletal, carbonatic Cryic Rendolls

**Typical Pedon**

About 90 percent of the surface is covered with pebbles.

A1—0 to 3 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine interstitial pores; 35 percent pebbles; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

A2—3 to 14 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine interstitial pores; 45 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

Bw—14 to 22 inches; yellowish brown (10YR 5/4) extremely gravelly loam, dark yellowish brown (10YR 3/4) moist; weak very fine and fine subangular blocky structure; soft, very friable, sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine interstitial pores and few fine tubular pores; 60 percent pebbles and 5 percent cobbles; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

C—22 to 29 inches; pale brown (10YR 6/3) extremely gravelly loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; few very fine interstitial pores; 65 percent pebbles and 15 percent cobbles; violently effervescent;
Land County, Nevada, South Part

moderately alkaline (pH 8.4); gradual wavy boundary.
R—29 inches; highly fractured limestone.

**Typical Pedon Location**

**Soil name and map unit in which located:** Hatur gravelly loam, 30 to 50 percent slopes, in Halakan-Hatur-Rock outcrop association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 15 miles north of Austin; about 900 feet north and 750 feet west of the southeast corner of sec. 36, T. 22 N., R. 44 E.

**Range in Characteristics**

**Soil moisture content:** Usually moist, but dry for 45 to 60 days late in summer and early in fall

**Average annual soil temperature:** 43 to 47 degrees F

**Average summer soil temperature:** 52 to 56 degrees F

**Thickness of the mollic epipedon:** 10 to 14 inches

**Depth to bedrock:** 20 to 40 inches

**Control section:**
- Texture—extremely gravelly loam or extremely gravelly sandy loam
- Content of clay—12 to 25 percent
- Content of rock fragments—averages 60 to 80 percent, mostly pebbles
- Calcium carbonate equivalent—60 to 80 percent

**A horizon:**
- Value—4 or 5 dry
- Chroma—2 or 3

**Bw horizon:**
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—3 or 4

**C horizon:**
- Value—4 or 5 moist
- Chroma—2 or 3

**Hessing Series**

**Depth class:** Very deep
**Drainage class:** Well drained

**Parent material:** Loess and silty alluvium that include some volcanic ash over coarse alluvium derived mostly from tuff, basalt, rhyolite, and andesite

**Positions on landscape:** Fan skirts, inset fans
**Slope:** 0 to 2 percent
**Mean annual precipitation:** About 7 inches
**Mean annual temperature:** About 49 degrees F

**Taxonomic class:** Coarse-loamy, mixed, mesic Typic Camborthids

**Typical Pedon**

A—0 to 4 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; moderate thin and very thick platy structure; slightly hard, very friable, slightly sticky and plastic; few very fine, fine, and medium roots; many medium vesicular pores; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bw—4 to 11 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; moderate coarse prismatic structure; hard, friable, sticky and very plastic; many very fine and few fine roots; many very fine interstitial and tubular pores; moderately alkaline (pH 8.4); abrupt smooth boundary.

Bqk—11 to 13 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; weak thick platy structure; hard, very friable and firm, sticky and plastic; few very fine roots; common very fine tubular pores; 50 percent weak discontinuous silica cementation; 10 percent weak, rounded durinodes 15 to 25 millimeters in diameter; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

C—13 to 18 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; 5 percent fine pebbles; strongly alkaline (pH 9.0); abrupt wavy boundary.

2Ck1—18 to 26 inches; light gray (10YR 7/2) gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 25 percent pebbles; common fine lime filaments and lime coatings on pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

2Ck2—26 to 30 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 3/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 35 percent pebbles; few fine lime filaments; slightly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary.

3Ck3—30 to 60 inches; variegated extremely gravelly loamy coarse sand; single grain; loose, nonsticky and nonplastic; few very fine roots; 65 percent pebbles; many fine lime filaments; slightly effervescent; moderately alkaline (pH 8.4).

**Typical Pedon Location**

**Map unit in which located:** Hessing silt loam

**Location in Nevada:** Lander County, Nevada, North Part, survey area; about 61 miles southwest of Battle
Mountain; about 790 feet east and 300 feet north of the southwest corner of sec. 7, T. 24 N., R. 41 E.

**Range in Characteristics**

*Soil moisture content:* Usually dry, but moist in some part for short periods from October through May  
*Average annual soil temperature:* 47 to 53 degrees F  
*Depth to the base of the Bw horizon:* 11 to 16 inches  
*Depth to the unconformable 2Ck horizon:* 15 to 25 inches  
*Depth to the unconformable 3Ck horizon:* 25 to 36 inches  
*Other characteristics:* As much as 50 percent thin, discontinuous, weakly silica-cemented lenses and as much as 20 percent weak durinodes present below a depth of 11 inches in some pedons  

**Control section:**  
Texture—averages gravelly loam or gravelly sandy loam  
Content of clay—8 to 18 percent when mixed  
Content of rock fragments—15 to 35 percent when mixed  

**A horizon:**  
Hue—2.5Y or 10YR  
Value—6 or 7 dry, 4 or 5 moist  
Chroma—2 or 3  
Structure—thin to thick and platy, fine to coarse and prismatic, or massive  
Reaction—moderately alkaline or strongly alkaline  
Other characteristics—slightly effervescent in some pedons because of calcareous dust recharge  

**Bw horizon:**  
Hue—2.5Y or 10YR  
Value—6 or 7 dry, 4 or 5 moist  
Chroma—2 or 3  
Texture—silt loam or silty clay loam  
Structure—platy, prismatic, angular blocky, subangular blocky, or massive  

**2Ck horizon:**  
Texture—gravelly loam or gravelly sandy loam  
Content of clay—15 to 30 percent  
Content of rock fragments—15 to 35 percent, mainly pebbles  
Consistence—slightly plastic or plastic (wet)  

**3Ck horizon:**  
Texture—stratified very gravelly loamy coarse sand to extremely gravelly sand  
Content of rock fragments—50 to 70 percent, mainly pebbles  
Consistence—soft or loose (dry), nonplastic or slightly plastic (wet)  
Reaction—mildly alkaline to strongly alkaline  

**Hooeite Series**

*Depth class:* Very shallow or shallow  
*Drainage class:* Well drained  
*Parent material:* Residuum derived from rhyolitic rock and undifferentiated volcanic rock  
*Positions on landscape:* Side slopes of hills and mountains  
*Slope:* 4 to 50 percent  
*Mean annual precipitation:* About 9 inches  
*Mean annual temperature:* About 47 degrees F  
*Taxonomic class:* Loamy-skeletal, mixed, mesic Lithic Haplargids  

**Typical Pedon**

About 10 percent of the surface is covered with cobbles and 45 percent with pebbles.  

**A1**—0 to 2 inches; light brownish gray (10YR 6/2) very gravelly fine sandy loam, dark grayish brown (10YR 4/2) moist; moderate medium platy structure; slightly hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; many fine and medium vesicular pores; 40 percent pebbles and 5 percent cobbles; slightly effervescent; mildly alkaline (pH 7.6); clear smooth boundary.  

**A2**—2 to 4 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate medium platy structure; soft, very friable, sticky and plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; 20 percent pebbles and 5 percent cobbles; common thin strongly effervescent lime coatings on the underside of rock fragments; slightly effervescent in matrix; mildly alkaline (pH 7.8); clear wavy boundary.  

**Bt**—4 to 8 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; 45 percent pebbles and 5 percent cobbles; common thin lime coatings on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.  

**R**—8 inches; hard, fractured rhyolitic tuff.  

**Typical Pedon Location**

*Soil name and map unit in which located:* Hooeite very gravelly fine sandy loam, 4 to 15 percent slopes, in Hooeite-Stingdorn association  
*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 25 miles northeast of
Lander County, Nevada, South Part

Austin: about 1,100 feet south of the northwest corner of sec. 25, T. 22 N., R. 46 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and early in spring; dry in mid-June through October

**Average annual soil temperature:** 47 to 52 degrees F

**Depth to hard bedrock:** 6 to 14 inches

**Other characteristics:** As much as 3 inches of highly fractured bedrock overlying the lithic contact in some pedons

**Control section:**
- Content of clay—18 to 25 percent when mixed
- Content of rock fragments—35 to 50 percent pebbles, 0 to 10 percent cobbles
- Reaction—mildly alkaline or moderately alkaline

**A horizon:**
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3
- Effervescence—noneffervescent or slightly effervescent
- Structure—platy or subangular blocky

**Bt horizon:**
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 to 4
- Texture—very gravelly loam or very gravelly clay loam
- Content of rock fragments—35 to 50 percent
- Structure—subangular blocky or granular
- Effervescence—slightly effervescent or strongly effervescent

**Hopeka Series**

**Depth class:** Very shallow

**Drainage class:** Well drained

**Parent material:** Residuum derived from limestone and dolostone

**Positions on landscape:** Side slopes of mountains

**Slope:** 30 to 50 percent

**Mean annual precipitation:** About 12 inches

**Mean annual temperature:** About 43 degrees F

**Taxonomic class:** Loamy-skeletal, carbonatic, frigid

**Lithic Xeric Torriorthents**

**Typical Pedon**

About 20 percent of the surface is covered with pebbles and 25 percent with cobbles.

A—0 to 4 inches; light brownish gray (10YR 6/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium and coarse roots; many very fine and fine interstitial pores and common fine tubular pores; 50 percent pebbles; lime coatings on the underside of pebbles; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

C—4 to 8 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots and few coarse roots; common fine interstitial pores and common very fine and fine and few medium tubular pores; 55 percent pebbles; lime coatings on the underside of pebbles; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

R—8 inches; limestone.

**Typical Pedon Location**

**Soil name and map unit in which located:** Hopeka very gravelly loam, 30 to 50 percent slopes, in Kram-Hopeka-Rock outcrop association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 20 miles west of Austin; about 550 feet south and 1,050 feet west of the northeast corner of sec. 32, T. 21 N., R. 42 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and spring, dry in June to mid-October

**Average annual soil temperature:** 43 to 47 degrees

**Depth to bedrock:** 4 to 10 inches

**Calcium carbonate equivalent:** 40 to 85 percent

**Reaction:** Moderately alkaline or strongly alkaline

**Effervescence:** Dominantly violently effervescent, but strongly effervescent in the upper part in some pedons

**Control section:**
- Content of clay—18 to 25 percent
- Content of rock fragments—35 to 60 percent limestone or dolostone pebbles, cobbles, or stones

**A horizon:**
- Hue—10YR or 7.5YR
- Value—5 to 7 dry, 3 or 4 moist
- Chroma—2 or 3

**C horizon:**
- Hue—10YR or 7.5YR
- Value—5 to 7 dry, 3 or 4 moist
Chroma—2 or 3
Structure—weak or moderate and subangular blocky, or massive

**Hymas Series**

**Depth class:** Shallow
**Drainage class:** Well drained
**Parent material:** Residuum and colluvium derived from limestone
**Positions on landscape:** Crests and side slopes of mountains
**Slope:** 30 to 50 percent
**Mean annual precipitation:** About 14 inches
**Mean annual temperature:** About 45 degrees F
**Taxonomic class:** Loamy-skeletal, carbonatic, frigid Lithic Haploxerolls

**Typical Pedon**

About 20 percent of the surface is covered with pebbles and 5 percent with cobbles.

A1—0 to 5 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine interstitial and tubular pores; 20 percent pebbles and 5 percent cobbles; thin violently effervescent lime coatings on rock fragments; slightly effervescent in matrix; moderately alkaline (pH 8.0); clear smooth boundary.

A2—5 to 9 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine interstitial and tubular pores; 15 percent pebbles and 5 percent cobbles; violently effervescent in matrix; moderately alkaline (pH 8.0); clear wavy boundary.

C—9 to 15 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and plastic; common very fine, fine, and medium roots and few coarse roots; common very fine and fine interstitial and tubular pores; 30 percent pebbles and 15 percent cobbles; thick violently effervescent lime coatings and pendants on rock fragments; slightly effervescent in matrix; moderately alkaline (pH 8.2); abrupt wavy boundary.

2R—15 inches; fractured limestone

**Typical Pedon Location**

**Soil name and map unit in which located:** Hymas gravelly loam, 30 to 50 percent slopes, in Hymas-Xine-Attella association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 12 miles north of Austin; about 1,770 feet west and 600 feet north of the southeast corner of sec. 21, T. 21 N., R. 44 E.

**Range in Characteristics**

**Soil moisture content:** Moist late in fall and in winter and spring, dry late in June through September
**Average annual soil temperature:** 42 to 47 degrees F
**Average summer soil temperature:** 59 to 66 degrees F
**Thickness of the mollic epipedon:** 7 to 14 inches
**Depth to bedrock:** 10 to 20 inches

**Control section:**
Content of clay—8 to 27 percent
Content of rock fragments—35 to 80 percent, dominantly angular limestone fragments

A horizon:
**Hue—**10YR or 2.5Y
**Value—**4.5 to 5.5 dry, 2.5 to 3.5 moist
**Chroma—**2 or 3 moist or dry
**Structure—**weak or moderate and platy or granular
**Reaction—**neutral to moderately alkaline
**Effervescence—**slightly effervescent or strongly effervescent

C horizon:
**Hue—**10YR or 2.5Y
**Value—**5 to 8 dry, 4 to 7 moist
**Chroma—**2.0 to 3.5 moist or dry
**Content of rock fragments—**averages 35 to 80 percent
**Structure—**massive, or weak and subangular blocky or granular
**Reaction—**mildly alkaline or moderately alkaline

**Isolede Series**

**Depth class:** Very deep
**Drainage class:** Excessively drained
**Parent material:** Eolian sand derived from various kinds of rock
**Positions on landscape:** Stabilized dunes on lakebeds, playas, terraces, alluvial fans, and uplands
**Slope:** 0 to 30 percent
**Mean annual precipitation:** About 6 inches
**Mean annual temperature:** About 52 degrees F
**Taxonomic class:** Mixed, mesic Typic Torripsamments
Typical Pedon

A—0 to 7 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; moderately alkaline (pH 8.2); clear smooth boundary.

C1—7 to 26 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores; moderately alkaline (pH 8.4); diffuse smooth boundary.

C2—26 to 60 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; slightly effervescent; moderately alkaline (pH 8.4).

Typical Pedon Location

Soil name and map unit in which located: Isoide fine sand. 4 to 30 percent slopes, in Bubus-Isolede association

Location in Nevada: Lander County, Nevada, North Part, survey area; about 20 miles southwest of Battle Mountain; about 2,100 feet west and 1,300 feet south of the northeast corner of sec. 4, T. 29 N., R. 42 E.

Range in Characteristics

Soil moisture content: Usually dry in April to mid-November, moist for short periods in mid-November through March

Average annual soil temperature: 53 to 57 degrees F

Control section:

Texture—dominantly fine sand, but sand in some pedons

Reaction—neutral to moderately alkaline

A horizon:

Hue—10YR or 2.5Y
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 or 3

C horizon:

Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

Reaction—moderately alkaline or strongly alkaline in the lower part

Effervescence—noneffervescent to strongly effervescent in the lower part

Other characteristics—2C horizon present below a depth of 40 inches in some pedons

Itca Series

Depth class: Shallow
Drainage class: Well drained
Parent material: Residuum derived from extrusive volcanic and pyroclastic rock
Positions on landscape: Side slopes of mountains
Slope: 15 to 75 percent
Mean annual precipitation: About 14 inches
Mean annual temperature: About 43 degrees F
Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls

Typical Pedon

About 20 percent of the surface is covered with pebbles, 35 percent with cobbles, and 25 percent with stones.

A1—0 to 6 inches; grayish brown (10YR 5/2) extremely stony loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure parting to weak very fine granular; slightly hard, very friable, nonsticky and slightly plastic; many very fine and few fine roots; many fine interstitial pores; 30 percent pebbles, 15 percent cobbles, and 15 percent stones; neutral (pH 7.2); clear wavy boundary.

A2—6 to 9 inches; brown (10YR 5/3) gravelly sandy loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common fine interstitial pores; 20 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.4); abrupt wavy boundary.

Bt1—9 to 13 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, very sticky and very plastic; common fine roots and few medium and coarse roots; common fine interstitial pores; many thin clay films in pores and on pedds; 25 percent pebbles and 15 percent cobbles; mildly alkaline (pH 7.4); clear irregular boundary.

Bt2—13 to 17 inches; light yellowish brown (10YR 6/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; hard, firm, very sticky and very plastic; few fine, medium, and coarse roots; few fine tubular pores; common moderately thick clay films in pores and on pedds; 20 percent pebbles, 20 percent cobbles, and 10 percent stones; mildly alkaline (pH 7.4); abrupt broken boundary.

R—17 inches; fractured andesite.
Typical Pedon Location

Soil name and map unit in which located: Itca extremely stony loam, 50 to 75 percent slopes, in Itca-Ninemile-Rock outcrop association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 22 miles east of Austin; about 1,950 feet east and 320 feet south of the northwest corner of sec. 21, T. 2 S., R. 40 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry for 60 to 90 days consecutively in July through October

Average annual soil temperature: 43 to 47 degrees F

Thickness of the mollic epipedon: 7 to 15 inches

(includes the upper part of the Bt horizon in some pedons)

Depth to bedrock: 10 to 20 inches

A horizon:

Hue—10YR or 7.5YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—weak or moderate, medium or thick, and platy; or weak or moderate, medium or coarse, and subangular blocky
Consistence—soft or slightly hard (dry), very friable or friable (moist), nonsticky to slightly sticky and slightly plastic to plastic (wet)
Reaction—neutral or mildly alkaline

Bt horizon:

Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4
Texture—clay or clay loam
Content of clay—35 to 45 percent
Content of rock fragments—averages 35 to 60 percent, mainly pebbles and cobbles, but as much as 85 percent in the lower part in some pedons
Consistence—slightly hard or hard (dry), friable or firm (moist), sticky or very sticky (wet)
Reaction—neutral to moderately alkaline

Other characteristics—thin BC or C horizon that is dominantly very soft, decomposing rock present in some pedons; tongues of Bt horizon extending into the fractures in the underlying bedrock in the shallower areas

Itca Variant

Depth class: Shallow
Drainage class: Well drained
Parent material: Residuum derived from tuffaceous sediment

Positions on landscape: Convex side slopes of mountains
Slope: 15 to 30 percent
Mean annual precipitation: About 12 inches
Mean annual temperature: About 45 degrees F

Taxonomic class: Loamy, mixed, frigid, shallow Aridic Argixerolls

Typical Pedon

About 30 percent of the surface is covered with pebbles and 5 percent with cobbles.

A—0 to 3 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate fine granular; slightly hard, friable, sticky and plastic; few very fine, medium, and coarse roots; many very fine and fine interstitial pores; 30 percent pebbles and 5 percent cobbles; slightly effervescent; mildly alkaline (pH 7.8); abrupt smooth boundary.

Bt—3 to 8 inches; grayish brown (10YR 5/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; common fine and medium roots and few coarse roots; common very fine and fine tubular pores; common moderately thick clay films on faces of pedds; 15 percent pebbles; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Btk—8 to 12 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; hard, firm, very sticky and very plastic; common fine and medium roots and few coarse roots; common very fine and fine tubular pores; common thin and few moderately thick clay films on faces of pedds; 10 percent pebbles; few fine lime masses; strongly effervescent; mildly alkaline (pH 7.8); clear wavy boundary.

Cr—12 to 24 inches; weathered tuffaceous sediment that is highly fractured in the upper part; few fine roots along fractures.

Typical Pedon Location

Soil name and map unit in which located: Itca Variant

very gravelly loam, 15 to 30 percent slopes, in Itca Variant-Reluctan-Handy association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 19 miles north of Austin; about 500 feet north and 1,700 feet west of the southeast corner of sec. 28, T. 22 N., R. 44 E.

Range in Characteristics

Soil moisture content: Moist in some part in mid-October
to mid-June, dry in summer and early in fall
Average annual soil temperature: 44 to 47 degrees F
Thickness of the mollic epipedon: 7 to 14 inches
(includes the Bt horizon)
Depth to paralithic contact: 10 to 20 inches
Effervescence: Dominantly slightly effervescent to strongly effervescent, but noneffervescent in the upper part in some pedons
Reaction: Mildly alkaline or moderately alkaline

Control section:
Texture (when mixed)—loam, clay loam, sandy clay loam, or gravelly loam
Content of clay—25 to 35 percent
Content of rock fragments—0 to 20 percent, mainly pebbles
A horizon:
Value—4 or 5 dry
Chroma—2 or 3

Izo Series

Depth class: Very deep
Drainage class: Excessively drained
Parent material: Alluvium derived from mixed igneous and sedimentary rock
Positions on landscape: Channels, inset fans, fan skirts
Slope: 0 to 4 percent
Mean annual precipitation: About 6 inches
Mean annual temperature: About 51 degrees F
Taxonomic class: Sandy-skeletal, mixed, mesic Typic Torriorthents

Typical Pedon

A—0 to 2 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; few medium and many very fine and fine vesicular pores; 15 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

C1—2 to 8 inches; light gray (2.5Y 7/2) gravelly loamy sand, light olive brown (2.5Y 5/4) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 30 percent pebbles; white (2.5Y 8/2) very thin lime coatings on the underside of 30 percent of pebbles; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

C2—8 to 34 inches; light gray (2.5Y 7/2) very gravelly coarse sand, light olive brown (2.5Y 5/4) moist; single grain; loose, nonsticky and nonplastic; common very fine roots; many very fine interstitial pores; 55 percent pebbles; white (2.5Y 8/2) very thin lime coatings on the underside of 30 percent of pebbles; strongly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.

C3—34 to 60 inches; light brownish gray (2.5Y 6/2) very gravelly coarse sand, grayish brown (2.5Y 5/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; 55 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6).

Typical Pedon Location

Soil name and map unit in which located: Izo gravelly loam, 0 to 4 percent slopes, in Izo-Bubus association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 26 miles southeast of Austin; about 1,850 feet south and 800 feet east of the northwest corner of sec. 12, T. 15 N., R. 44 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively in July through October as a result of convection storms
Average annual soil temperature: 53 to 59 degrees F
Reaction: Moderately alkaline or strongly alkaline, commonly increasing in alkalinity with increasing depth
Effervescence: Slightly effervescent to strongly effervescent

Other characteristics: Thin noncalcareous strata in some pedons

Control section:
Texture (fraction less than 2 millimeters)—stratified coarse sand, loamy sand, or loamy coarse sand
Content of rock fragments—averages 50 to 75 percent, mainly pebbles

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4
Structure—platy, massive, or single grain

C horizon:
Hue—2.5Y or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Structure—massive or single grain
Texture (fraction less than 2 millimeters)—commonly stratified sand, coarse sand, loamy sand, or loamy coarse sand
Content of rock fragments—dominantly 50 to 75 percent, mainly pebbles, but strata that are 15
to 85 percent rock fragments present in some pedons
Other characteristics—coatings of lime on as much as 50 percent of the underside of the rock fragments in some pedons

Izod Series

Depth class: Very shallow or shallow
Drainage class: Well drained
Parent material: Residuum derived from shale and some limestone, dolomite, and sandstone
Positions on landscape: Side slopes and crests of hills and mountains
Slope: 15 to 75 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 47 degrees F
Taxonomic class: Loamy-skeletal, carbonatic, mesic Lithic Xeric Torriorthents

Typical Pedon
About 30 percent of the surface is covered with pebbles, 25 percent with cobbles, and 5 percent with stones.
A—0 to 4 inches; pale brown (10YR 6/3) extremely cobbly fine sandy loam, dark brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; many very fine vesicular pores; 35 percent pebbles and 35 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.
C—4 to 10 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; common very fine interstitial pores; 30 percent pebbles, 10 percent cobbles, and 5 percent stones; few fine soft lime masses; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.
2R—10 inches; limestone that is weathered and fractured in the upper 1 inch and is hard below this depth; few fine roots in fractures; common lime pendants on rock fragments.

Typical Pedon Location
Soil name and map unit in which located: Izod extremely cobbly fine sandy loam, 15 to 50 percent slopes, in Izod-Rock outcrop association
Location in Nevada: Lander County, Nevada, North Part, survey area; about 52 miles southwest of Battle Mountain; about 1,800 feet north and 800 feet east of the southwest corner of sec. 5, T. 24 N., R. 40 E.

Range in Characteristics
Soil moisture content: Moist late in fall to early in spring, dry in June through October
Average annual soil temperature: 47 to 50 degrees F
Depth to bedrock: 7 to 14 inches
Reaction: Mildly alkaline or moderately alkaline
Calcium carbonate equivalent: 50 to 60 percent
Other characteristics: Silica and lime laminae commonly covering as much as 75 percent of the underlying bedrock
Control section:
Content of clay—18 to 25 percent
Content of rock fragments—40 to 75 percent, mainly pebbles
A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Structure—weak or moderate, very thin or thin, and platy
Effervescence—strongly effervescent or violently effervescent
C horizon:
Value—6 to 8 dry, 4 or 5 moist
Chroma—2 or 3
Structure—weak or moderate and subangular blocky, or massive

Jesse Camp Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Silty alluvium that is derived mainly from volcanic rock and includes some volcanic ash
Positions on landscape: Inset fans, stream terraces
Slope: 0 to 2 percent
Mean annual precipitation: About 8 inches
Mean annual temperature: About 44 degrees F
Taxonomic class: Fine-silty, mixed, frigid Xerolic Camborthids

Typical Pedon
A—0 to 4 inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; many fine and medium vesicular and interstitial pores; moderately alkaline (pH 8.2); abrupt smooth boundary.
Bw—4 to 12 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common
very fine and coarse roots; common very fine and medium tubular pores; moderately alkaline (pH 8.2); clear wavy boundary.

Bqk1—12 to 26 inches; light brownish gray (10YR 6/2) silt loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate thin platy; hard, friable, slightly sticky and slightly plastic; few fine and medium roots; common fine and medium tubular pores; 5 percent durinodes; strongly effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.

Bqk2—26 to 60 inches; light brownish gray (10YR 6/2) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; hard, friable, slightly sticky and slightly plastic; few fine roots; few fine tubular pores; 15 percent durinodes; common medium faint light gray (10YR 7/2) lime seams; strongly effervescent; moderately alkaline (pH 8.4).

**Typical Pedon Location**

*Soil name and map unit in which located:* Jesse Camp silt loam, 0 to 2 percent slopes, in Fenster-Jesse Camp association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 22 miles east of Austin; about 400 feet south and 700 feet west of the northeast corner of sec. 19, T. 19 N., R. 48 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 45 to 47 degrees F

*Combined thickness of the A and Bw horizons:* 10 to 17 inches

*Content of clay in the control section:* 18 to 27 percent

*Other characteristics:* C horizon below a depth of 50 inches in some pedons

**A horizon:**

*Hue:* 10YR or 2.5Y

*Value:* 6 or 7 dry, 3 or 4 moist

*Chroma:* 2 or 3

*Structure:* weak or moderate, very thin to medium, and platy, or massive

*Consistence:* soft or slightly hard

*Effervescence:* noneffervescent or slightly effervescent

**Bw horizon:**

*Hue:* 10YR or 2.5Y

*Value:* 6 or 7 dry, 3 or 4 moist

*Chroma:* 2 or 3

*Texture:* silt loam or very fine sandy loam

*Structure:* weak or moderate, very thin to medium, and platy; or weak, fine or medium, and subangular blocky

**Effervescence:** noneffervescent or slightly effervescent

**Bk horizon:**

*Hue:* 10YR or 2.5Y

*Value:* 6 or 7 dry, 3 or 4 moist

*Chroma:* 2 or 3

*Texture:* dominantly silt loam, but thin strata of very fine sandy loam or silty clay loam

*Structure:* prismatic, angular blocky, or massive

*Reaction:* moderately alkaline to very strongly alkaline

*Effervescence:* strongly effervescent or violently effervescent

*Other characteristics:* few to many, very fine, fine, and medium, soft lime masses, filaments, or seams in the lower part; as much as 20 percent brittle durinodes in a friable matrix (durinodes are as much as 0.5 inch in diameter and 0.5 to 2.0 inches in length and are hard to extremely hard)

**Jung Series**

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from metavolcanic and volcanic rock

*Positions on landscape:* Crests and side slopes of mountains and hills

*Slope:* 4 to 50 percent

*Mean annual precipitation:* About 9 inches

*Mean annual temperature:* About 48 degrees F

**Taxonomic class:** Clayey-skeletal, montmorillonitic, mesic Lithic Xerorolic Hapludands

**Typical Pedon**

About 20 percent of the surface is covered with pebbles and 25 percent with cobbles.

**A1—**0 to 3 inches; light brownish gray (10YR 6/2) very cobbly loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure parting to weak very fine granular; soft, very friable, slightly sticky and slightly plastic; few fine roots; many fine vesicular pores; 25 percent pebbles and 25 percent cobbles; neutral (pH 7.0); clear smooth boundary.

**A2—**3 to 8 inches; light brownish gray (10YR 6/2) cobbly loam, dark brown (10YR 3/3) moist; weak thin platy structure parting to weak very fine granular; soft, very friable, slightly sticky and slightly plastic; common fine roots; many very fine interstitial pores; 10 percent pebbles and 20 percent cobbles; neutral (pH 7.2); clear wavy boundary.
Bt—8 to 15 inches; brown (10YR 5/3) very cobbly clay loam; dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate medium and fine subangular blocky; very hard, firm, sticky and plastic; common fine roots; few very fine tubular pores; continuous thick clay films on peds; 20 percent pebbles and 20 percent cobbles; moderately alkaline (pH 8.4); gradual wavy boundary.

Btk—15 to 19 inches; pale brown (10YR 6/3) very cobbly clay loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots; few very fine tubular pores; thin discontinuous clay films on peds; 30 percent pebbles and 20 percent cobbles; lime coatings on the underside of rock fragments; slightly effervescent; moderately alkaline (pH 8.4); abrupt irregular boundary.

R—19 inches; fractured, hard rhyolite; fractures more than 4 inches apart.

**Typical Pedon Location**

*Soil name and map unit in which located:* Jung very cobbly loam, 15 to 30 percent slopes, in Nevada-Jung association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; in cut at side of powerline access road about 17.5 miles west of Austin, near Mount Airy; about 50 feet south and 1,300 feet west of the northeast corner of sec. 5, T. 19 N., R. 41 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in mid-June to early in November

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to bedrock:* 14 to 20 inches

*Control section:*

- Content of clay—35 to 45 percent
- Content of rock fragments—35 to 50 percent, mainly pebbles and cobbles

*A horizon:*

- Value—3 or 4 moist
- Chroma—2 or 3
- Structure—weak or moderate, thin or medium, and platy
- Reaction—neutral or mildly alkaline

*B horizon:*

- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—very gravelly clay loam, very cobbly clay loam, or very cobbly clay
- Structure—dominantly weak to strong and prismatic

or angular blocky, but subangular blocky in the lower part in some pedons

Reaction—moderately alkaline or strongly alkaline

**Btk horizon:**

Effervescence—slightly effervescent or strongly effervescent

**Kawich Series**

*Depth class:* Very deep

*Drainage class:* Excessively drained

*Parent material:* Eolian sand derived from various kinds of rock

*Positions on landscape:* Stabilized dunes

*Slope:* 4 to 30 percent

*Mean annual precipitation:* About 6 inches

*Mean annual temperature:* About 53 degrees F

**Taxonomic class:** Mixed, mesic Typic Torripsamments

**Typical Pedon**

A—0 to 4 inches; very pale brown (10YR 7/3) fine sand, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; common fine and medium interstitial pores; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

C1—4 to 42 inches; very pale brown (10YR 7/3) fine sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common fine and medium roots; many fine interstitial pores and common fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

C2—42 to 52 inches; pale brown (10YR 6/3) fine sand, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine tubular pores; violently effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

C3—52 to 54 inches; white (10YR 8/2) fine sand (volcanic ash), light brownish gray (10YR 6/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine tubular pores; violently effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

C4—54 to 60 inches; very pale brown (10YR 7/3) fine sand, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8).

**Typical Pedon Location**

*Soil name and map unit in which located:* Kawich fine sand, 4 to 30 percent slopes, in Yobe-Kawich-Playas association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 26 miles south of Austin; about 550 feet east of the southwest corner of sec. 8, T. 15 N., R. 45 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively in July and October as a result of convection storms
Average annual soil temperature: 54 to 59 degrees F
Depth to unconformable material: 40 to more than 120 inches
Texture of the control section: Averages fine sand, but strata of sand or loamy fine sand present in some pedons
Effervescence: Slightly effervescent to violently effervescent
Reaction: Moderately alkaline to very strongly alkaline
Hue: 10YR or 7.5YR
Value: 5 to 8 dry, 4 to 6 moist
Chroma: 2 to 4
Other characteristics: Significant amounts of pyroclastic material present

Kelk Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Loess that includes some volcanic ash and mixed silty alluvium derived from various kinds of rock
Positions on landscape: Inset fans, alluvial plains
Slope: 0 to 4 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: 48 degrees F
Taxonomic class: Fine-silty, mixed, mesic Durixerollic Camborthids

Typical Pedon

A—0 to 4 inches; light brownish gray (10YR 6/2) very fine sandy loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; neutral (pH 7.2); abrupt smooth boundary.
Bw—4 to 12 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, very sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; neutral (pH 7.2); clear smooth boundary.
Bq1—12 to 20 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, very sticky and plastic; few very fine and fine roots; few very fine tubular pores; 20 percent hard, firm, strongly cemented durinodes; 20 percent discontinuous weak cementation; mildly alkaline (pH 7.4); clear wavy boundary.
Bq2—20 to 27 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; 40 percent hard, firm, strongly cemented durinodes; 20 percent discontinuous weak cementation; moderately alkaline (pH 8.4); clear wavy boundary.
Bqk1—27 to 31 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; 40 percent strongly cemented durinodes in continuous, weakly silica-cemented matrix; 5 percent pebbles; common fine seams and threads of lime; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.
Bqk2—31 to 40 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; 40 percent strongly cemented durinodes in continuous, weakly silica-cemented matrix; common fine seams and threads of lime; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

Typical Pedon Location

Soil name and map unit in which located: Kelk very fine sandy loam, lacustrine substratum, 0 to 2 percent slopes, in Alluv-Kelk association
Location in Nevada: Lander County, Nevada, South Part, survey area; in an unsectioned area about 1,100 feet east and 550 feet south of the northwest corner of the assumed sec. 6, T. 14 N., R. 38 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry early in June through October
Average annual soil temperature: 47 to 52 degrees F
Depth to the base of the Bw horizon: 12 to 18 inches
Depth to continuous, weak, silica cementation: 18 to 35 inches
Depth to carbonates: 12 to 35 inches
Content of clay in the control section: 18 to 25 percent
Other characteristics: Typically slightly or moderately affected by salt below a depth of 24 to 48 inches

A horizon:
- Hue—10YR or 2.5Y
- Structure—very thin or thin and platy, very fine or fine and prismatic, or massive
- Consistency—slightly sticky or sticky and slightly plastic or plastic
- Reaction—neutral to moderately alkaline
- Effervescence—noneffervescent or slightly effervescent

Bw horizon:
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—2 or 3
- Structure—angular blocky, subangular blocky, prismatic, or massive
- Reaction—dominantly neutral to moderately alkaline, but strongly alkaline in the lower part
- Effervescence—noneffervescent or slightly effervescent
- Other characteristics—10 to 20 percent weak durinodes in the lower part in some pedons

Bq and Bqk horizons:
- Value—6 to 8 dry, 3 to 6 moist
- Chroma—2 to 4
- Texture—dominantly silt loam, but thin strata of silty clay loam common in some pedons below a depth of 30 inches
- Reaction—neutral to strongly alkaline, increasing in alkalinity with increasing depth
- Effervescence (Bqk horizon)—slightly effervescent to violently effervescent
- Other characteristics—strata are discontinuously cemented with silica and are 30 to 90 percent durinodes or are 20 to 50 percent discontinuously weakly cemented with silica; relict mottles absent in the lower part of the Bqk horizon in some pedons; lenses that are 5 to 15 percent pebbles in the Bqk horizon in some pedons; extremely gravelly strata below a depth of 42 inches in some pedons; silty clay loam 2Bk horizon below a depth of 39 inches in some pedons

Kingingham Series

Depth class: Moderately deep to duripan
Drainage class: Well drained

Parent material: Thin mantle of loess over alluvium derived from various kinds of rock
Slope: 2 to 4 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 48 degrees F

Taxonomic class: Fine, montmorillonitic, mesic Typic Nadurargids

Typical Pedon

About 20 percent of the surface is covered with pebbles.

A1—0 to 3 inches; very pale brown (10YR 7/3) gravelly very fine sandy loam, dark brown (10YR 4/3) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; many very fine and fine vesicular pores; 15 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary.

A2—3 to 7 inches; pale brown (10YR 6/3) gravelly very fine sandy loam, dark brown (10YR 4/3) moist; strong thick platy structure; hard, friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine and fine vesicular pores; 20 percent pebbles; moderately alkaline (pH 8.2); clear wavy boundary.

2Btnc1—7 to 12 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; strong medium angular blocky structure; slightly hard, very friable, very sticky and very plastic; common fine and medium roots; many very fine and fine tubular pores; common moderately thick clay films on faces of peds and lining pores; 15 percent pebbles; common fine seams of lime; slightly effervescent in matrix; strongly alkaline (pH 8.6); clear wavy boundary.

2Btnc2—12 to 18 inches; yellowish brown (10YR 5/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; hard, firm, very sticky and very plastic; common fine and medium roots; common very fine tubular pores; many moderately thick and thick clay films on faces of peds and lining pores; 20 percent pebbles; common fine seams of lime; slightly effervescent in matrix; strongly alkaline (pH 8.8); clear wavy boundary.

2Btgc—18 to 22 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few fine roots; few very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 10 percent weakly cemented durinodes; 50 percent pebbles; common fine seams
of lime; strongly effervescent; strongly alkaline (pH 8.6); abrupt irregular boundary.
2Bqkm1—22 to 28 inches; very pale brown (10YR 8/3), indurated duripan, very pale brown (10YR 7/4) moist; massive; extremely hard, extremely firm; violently effervescent.
2Bqkm2—28 to 60 inches; very pale brown (10YR 8/3), indurated duripan alternating with thin horizontal lenses that are weakly to strongly cemented; very pale brown (10YR 7/4) moist; massive; violently effervescent.

Typical Pedon Location

Soil name and map unit in which located: Kingingham gravely very fine sandy loam, 2 to 8 percent slopes, in Kingingham-Golconda-Whirllo association
Location in Nevada: Lander County, Nevada, North Part, survey area; about 20 miles south of Battle Mountain; about 2,630 feet south and 2,630 feet east of the northwest corner of sec. 6, T. 30 N., R. 43 E.

Range in Characteristics

Soil moisture content: Moist for short periods in winter and early in spring, dry late in May through October
Average annual soil temperature: 47 to 52 degrees F
Depth to the duripan: 20 to 30 inches
Reaction: Moderately alkaline or strongly alkaline, increasing in alkalinity with increasing depth
Other characteristics: Bqk horizon present above the indurated duripan in some pedons

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

Bt horizon:
Value—4 to 6 dry, 4 or 5 moist
Chroma—4 to 6
Texture—gravely clay loam, gravelly silty clay loam, gravelly clay, or gravelly silty clay
Content of clay—35 to 50 percent
Content of rock fragments—15 to 35 percent when mixed, mainly pebbles
Exchangeable sodium percentage—15 to 30

Kobeh Series

Depth class: Very deep
Drainage class: Somewhat excessively drained
Parent material: Mixed alluvium that includes some volcanic ash
Positions on landscape: Inset fans, fan skirts, stream terraces
Slope: 0 to 8 percent

Mean annual precipitation: About 9 inches
Mean annual temperature: About 43 degrees F

Taxonomic class: Loamy-skeletal, mixed, frigid Durixerolic Camborthids

Typical Pedon

A—0 to 7 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few medium roots and common fine and very fine roots; common fine and very fine interstitial pores; 25 percent pebbles; neutral (pH 7.0); clear smooth boundary.
Bw—7 to 15 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few medium roots and common fine and very fine roots; common fine and very fine interstitial pores; 30 percent pebbles; neutral (pH 7.0); clear wavy boundary.
Bqk—15 to 32 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; few fine and very fine roots; few fine and very fine interstitial pores; discontinuous, thin, weakly cemented laminae; 20 percent brittle durinodes; 50 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

2Bq—15 to 32 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; few fine and very fine roots; common fine and very fine interstitial pores; 45 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.
3Bk—52 to 60 inches; light gray (10YR 7/2) gravelly fine sandy loam, brown (10YR 5/3) moist; massive; hard, friable, nonsticky and nonplastic; few medium roots; common fine and very fine interstitial pores; 30 percent pebbles; violently effervescent; strongly alkaline (pH 9.0).

Typical Pedon Location

Soil name and map unit in which located: Kobeh gravelly loam, 0 to 4 percent slopes, in Kobeh-Shipley association
Location in Nevada: Eureka County Area, Nevada, survey area; about 14 miles west of Eureka; about 280 feet south and 660 feet east of the northwest corner of sec. 11, T. 18 N., R. 51 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in June through October
Average annual soil temperature: 44 to 47 degrees F
Combined thickness of the A and Bw horizons: 12 to 30 inches
Depth to the 2Bk horizon: 20 to 35 inches
Control section:
Texture—gravelly sandy loam or gravelly fine sandy loam in the upper part; dominantly very gravelly sand in the lower part, but strata of very gravelly sandy loam common in some pedons
Content of clay—5 to 15 percent in the upper part, less than 10 percent in the lower part
Content of rock fragments—averages 35 to 60 percent, mainly pebbles
A horizon:
Value—5 or 6 dry, 3 or 4 moist (value of more than 5.5 dry and 3.5 moist occurs when the upper 7 inches is mixed)
Structure—weak or moderate, very thin to medium, and platy; weak or moderate, very fine to medium, and subangular blocky; single grain; or massive
Reaction—slightly acid or neutral
Bw horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—2 or 3
Structure—weak, coarse or very coarse, and prismatic; moderate, medium or coarse, and subangular blocky, or massive
Bq and 2Bk horizons:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Reaction—neutral to strongly alkaline
Other characteristics—20 to 70 percent 0.5- to 1-inch-thick, hard or very hard durinodes in the Bq horizon; few to many silica bridges; discontinuous, weakly or strongly cemented layer that extends 6 to 30 inches horizontally and is as much as 3 inches thick present at the top of the 2Bk horizon in some pedons
2C or 3Bk horizon (when present):
Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 to 6 moist
Chroma—1 to 3
Other characteristics—strata of gravelly fine sandy loam or very gravelly fine sandy loam below a depth of 50 inches in some pedons

Koyen Series

Depth class: Very deep
Drainage class: Well drained

Parent material: Loamy alluvium derived dominantly from volcanic rock
Positions on landscape: Fan skirts
Slope: 2 to 4 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 52 degrees F
Taxonomic class: Coarse-loamy, mixed, mesic Typic Camborthids

Typical Pedon

A—0 to 4 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; soft, very friable, slightly sticky and nonplastic; few fine and medium roots; common fine and medium vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.2); abrupt smooth boundary.
Bw1—4 to 8 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine roots and common fine and medium roots; common fine and medium tubular pores; 10 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary.
Bw2—8 to 14 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common fine and medium roots; common fine and medium tubular pores; few fine filaments or threads of lime; 10 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.
Bk1—14 to 34 inches; light brownish gray (10YR 6/2) sandy loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few fine and medium roots; common fine tubular pores; common medium filaments or threads of lime; 10 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.
Bk2—34 to 60 inches; light brownish gray (10YR 6/2) gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few fine tubular pores; few fine lime filaments or threads and lime coatings on pebbles; 20 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8).

Typical Pedon Location

Map unit in which located: Koyen fine sandy loam, 2 to 4 percent slopes
Location in Nevada: Landers County, Nevada, South Part, survey area; about 28 miles southeast of
Range in Characteristics

Soil moisture content: Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively between July and October as a result of convection storms

Average annual soil temperature: 53 to 59 degrees F

Depth to the Bk horizon: 14 to 21 inches

Reaction: Moderately alkaline or strongly alkaline
(strongly alkaline in the Bk horizon)

Other characteristics: 2C horizon present in some pedons

Control section:
Texture—dominantly sandy loam, but strata of fine sandy loam, loam, or loamy sand in some pedons

Content of clay—10 to 18 percent

Content of rock fragments—averages 10 to 25 percent, but individual layers are as much as 40 percent pebbles

A horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Structure—very thin to medium and platy, very fine to medium and subangular blocky, or massive

Bw horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Structure—very weak or weak, coarse or medium, and subangular blocky; or massive

Other characteristics—calcareous only in the lower part

Bk horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 to 4
Effervescence—strongly effervescent or violently effervescent
Structure—subangular blocky or massive

Koynik Series

Depth class: Very shallow or shallow
Drainage class: Well drained
Parent material: Residuum derived from limestone and calcareous shale
Positions on landscape: Hillsides
Slope: 15 to 30 percent
Mean annual precipitation: About 7 inches

Mean annual temperature: About 49 degrees F

Taxonomic class: Loamy-skeletal, carbonatic, mesic Lithic Torriorthents

Typical Pedon

About 40 percent of the surface is covered with pebbles and 10 percent with cobbles.

A1—0 to 3 inches; very pale brown (10YR 7/3) very gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; many very fine vesicular pores; 30 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

A2—3 to 6 inches; pale brown (10YR 6/3) very gravelly silt loam, brown (10YR 4/3) moist; moderate thin platy structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine vesicular pores and few very fine tubular pores; 40 percent pebbles; common medium lime pendants on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk—6 to 8 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; moderate thin platy structure parting to moderate fine granular; slightly hard, very friable, sticky and plastic; common very fine and fine roots; many very fine and fine interstitial and tubular pores; 40 percent pebbles; common fine soft masses of lime and common medium pendants of lime on the underside of or coating rock fragments; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

2R—8 inches; hard limestone.

Typical Pedon Location

Soil name and map unit in which located: Koynik very gravelly very fine sandy loam, 15 to 30 percent slopes, in Koynik, steep-Koynik-Rock outcrop association

Location in Nevada: Lander County, Nevada, North Part, survey area; about 30 miles southwest of Battle Mountain, in the Fish Creek Mountains; in an unsectored area about 1,000 feet north and 3,000 feet west of the southwest corner of the assumed sec. 6, T. 28 N., R. 43 E.

Range in Characteristics

Soil moisture content: Moist for short periods in winter and early in spring, dry in May through October

Average annual soil temperature: 47 to 52 degrees F

Depth to lithic contact: 8 to 14 inches
Reaction: Moderately alkaline or strongly alkaline
Calcium carbonate equivalent: 40 to 60 percent, usually increasing with increasing depth
Other characteristics: Thin Cr horizon or 1 to 2 inches of highly fractured bedrock present at the lithic contact
Control section:
Texture—very gravelly silt loam, very gravelly loam, or very gravelly very fine sandy loam
Content of clay—15 to 25 percent
Content of rock fragments—35 to 50 percent, mainly pebbles
A horizon:
Value—6 or 7 dry, 4 to 6 moist
Chroma—2 to 4
Bk horizon:
Hue—10 YR or 2.5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—3 or 4
Structure—weak or moderate and platy or subangular blocky, or massive

Kram Series

Depth class: Very shallow or shallow
Drainage class: Somewhat excessively drained
Parent material: Residuum derived from limestone
Positions on landscape: Side slopes of mountains
Slope: 30 to 50 percent
Mean annual precipitation: About 10 inches
Mean annual temperature: About 48 degrees F
Taxonomic class: Loamy-skeletal, carbonatic, mesic
Lithic Xeric Torriorthents

Typical Pedon

About 25 percent of the surface is covered with pebbles, 15 percent with cobbles, and 2 percent with stones.
A—0 to 4 inches; light brownish gray (10 YR 6/2) very cobbly loam, very dark grayish brown (10 YR 3/2) moist; weak fine granular structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine interstitial pores; 30 percent pebbles and 20 percent cobbles; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary.
C—4 to 13 inches; pale brown (10 YR 6/3) very gravelly very fine sandy loam, dark brown (10 YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots and few coarse roots; common very fine interstitial pores; 45 percent pebbles and 10 percent cobbles; violently effervescent;

moderately alkaline (pH 8.4); abrupt irregular boundary.
R—13 inches; fractured limestone.

Typical Pedon Location

Soil name and map unit in which located: Kram very cobbly loam in Attella-Xine-Kram association
Location in Nevada: Lander County, Nevada, North Part, survey area; about 46 miles north of Austin; about 2,400 feet south and 1,100 feet west of the northeast corner of sec. 19, T. 25 N., R. 40 E.

Range in Characteristics

Soil moisture content: Usually dry in mid-June through October
Average annual soil temperature: 49 to 52 degrees F
Depth to bedrock: 8 to 14 inches
Reaction: Moderately alkaline or strongly alkaline
Calcium carbonate equivalent (fraction less than 20 millimeters): 40 to 50 percent
Control section:
Content of clay—8 to 18 percent
Content of rock fragments—40 to 50 percent pebbles; averages 5 to 10 percent cobbles and stones
A horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 or 3
Structure—granular or platy
Effervescence—slightly effervescent to violently effervescent
C horizon:
Hue—10 YR or 2.5Y
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 to 4
Texture—very gravelly very fine sandy loam or very gravelly loam
Content of rock fragments—45 to 55 percent pebbles, 5 to 10 percent cobbles and stones
Structure—subangular blocky or massive
Effervescence—strongly effervescent or violently effervescent

Labshaft Series

Depth class: Shallow
Drainage class: Well drained
Parent material: Residuum derived from siliceous rock
Positions on landscape: Side slopes of mountains
Slope: 30 to 50 percent
Mean annual precipitation: About 14 inches
Mean annual temperature: About 43 degrees F
Taxonomic class: Loamy-skeletal, mixed Lithic Cryoborolls

Typical Pedon

About 10 percent of the surface is covered with pebbles, 30 percent with cobbles, and 30 percent with stones.

A1—0 to 3 inches; brown (10YR 5/3) extremely stony loam, dark brown (10YR 3/3) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine tubular pores; 15 percent pebbles, 25 percent cobbles, and 20 percent stones; neutral (pH 6.8); clear smooth boundary.

A2—3 to 8 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 15 percent pebbles, 25 percent cobbles, and 5 percent stones; neutral (pH 7.0); clear irregular boundary.

Bw—8 to 15 inches; yellowish brown (10YR 5/4) extremely gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate fine angular blocky structure; slightly hard, friable, sticky and plastic; common fine, medium, and coarse roots; common very fine tubular pores; 45 percent pebbles, 10 percent cobbles, and 10 percent stones; neutral (pH 7.2); abrupt irregular boundary.

R—15 inches; fractured siliceous rock; few fine roots in crevices.

Typical Pedon Location

Soil name and map unit in which located: Labshaft extremely stony loam, 30 to 50 percent slopes, in Labshaft-Hapgoods-Rock outcrop association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 40 miles southwest of Austin; in an unsectionalized area about 2,000 feet south of the northwest corner of the presumed sec. 9, T. 17 N., R. 38 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in mid-July to early in October
Average annual soil temperature: 43 to 47 degrees F
Average summer soil temperature: 54 to 59 degrees F
Thickness of the mollic epipedon: 7 to 14 inches (commonly includes part or all of the Bw horizon)
Depth to bedrock: 10 to 20 inches
Reaction: Neutral or slightly acid

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3

B horizon:
Value—5 or 6 dry, 2 or 3 moist
Chroma—2 to 4
Texture—very gravelly loam, very gravelly clay loam, extremely gravelly sandy clay loam, or extremely gravelly loam
Content of clay—25 to 35 percent
Content of rock fragments—40 to 70 percent, mostly pebbles

Laped Series

Depth class: Shallow to duripan
Drainage class: Well drained
Parent material: Residuum and colluvium derived from rhyolitic tuff and andesite
Positions on landscape: Crests, shoulder slopes, and side slopes of hills
Slope: 8 to 30 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 49 degrees F

Taxonomic class: Loamy, mixed, mesic, shallow Typic Durargids

Typical Pedon

About 30 percent of the surface is covered with pebbles.

A1—0 to 3 inches; light gray (10YR 7/2) gravelly loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine vesicular pores; 20 percent pebbles; moderately alkaline (pH 8.2); abrupt smooth boundary.

A2—3 to 6 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary.

Bt—6 to 12 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common medium roots; common very fine and fine tubular pores; few thin clay films on pedes and bridging sand grains; 10 percent pebbles and 5...
percent cobbles; moderately alkaline (pH 8.2); clear smooth boundary.
Btk—12 to 18 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine prismatic structure parting to strong fine angular blocky; hard, firm, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; 15 percent pebbles and 5 percent cobbles; few fine strongly effervescent lime filaments and thin strongly effervescent lime coatings on the underside of coarse fragments; noneffervescent in matrix; moderately alkaline (pH 8.3); abrupt wavy boundary.
Bqkm—18 to 23 inches; white (10YR 8/2), indurated duripan that has a laminar cap 2 millimeters thick; pale brown (10YR 6/3) moist; massive; extremely hard, extremely firm; violently effervescent; clear wavy boundary.
2R—23 inches; hard bedrock.

Typical Pedon Location

Soil name and map unit in which located: Laped gravelly loam. 8 to 15 percent slopes, in Laped-Colbar-Soil association
Location in Nevada: Lander County, Nevada, North Part, survey area: about 52 miles southwest of Battle Mountain; about 1,800 feet south and 400 feet west of the northeast corner of sec. 22, T. 24 N., R. 40 E.

Range in Characteristics

Soil moisture content: Moist for short periods in winter and early in spring, dry in May through October
Average annual soil temperature: 47 to 51 degrees F
Thickness of the solum and depth to the duripan: 14 to 20 inches
Depth to bedrock: 20 to 30 inches
Other characteristics: Thin Bqk horizon above the duripan in some pedons

Control section:
Content of clay—27 to 35 percent
Content of rock fragments—15 to 35 percent, mainly pebbles

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—4 to 6
Reaction—dominantly moderately alkaline, but strongly alkaline in the lower part in some pedons

Sodium adsorption ratio—2 to 10, generally increasing in concentration with increasing depth
Effervescence—noneffervescent or slightly effervescent in the matrix in the lower part
Other characteristics—filaments or coatings of lime common in most pedons

Laxal Series

Depth class: Very deep
Drainage class: Somewhat excessively drained
Parent material: Alluvium derived from shale and volcanic rock
Positions on landscape: Inset fans, fan skirts
Slope: 0 to 4 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 52 degrees F

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Durothordic Torriorthents

Typical Pedon

A1—0 to 3 inches; very pale brown (10YR 7/3) gravelly fine sandy loam, brown (10YR 4/3) moist; moderate fine and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; many very fine and fine vesicular pores; 20 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.
A2—3 to 6 inches; light gray (10YR 7/2) gravelly fine sandy loam, dark brown (10YR 3/3) moist; strong fine and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; many very fine and fine vesicular pores and common very fine tubular pores; 20 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.
Bqk1—6 to 12 inches; light brownish gray (2.5Y 6/2) very gravelly loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; white (2.5Y 8/2) lime coatings and olive yellow (2.5Y 6/8) silica coatings 0.5 to 2.0 millimeters thick on the underside of pebbles; common firm coarse durinodes; 45 percent discontinuous weak silica and lime cementation bridging pebbles; 40 percent pebbles; violently effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.
Bqk2—12 to 17 inches; light brownish gray (2.5Y 6/2)
very gravelly sandy loam, dark grayish brown (2.5Y 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine, common fine, and few medium roots; common very fine and fine tubular pores; white (2.5Y 8/2) lime coatings and olive yellow (2.5Y 6/8) silica coatings 0.5 to 2.0 millimeters thick on the underside of pebbles; 50 percent pebbles; violently effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.

Bqk3—17 to 23 inches; light brownish gray (2.5Y 6/2) very gravelly sandy loam, very dark grayish brown (2.5Y 3/2) moist; single grain; loose, nonsticky and nonplastic; many very fine and common fine roots; white (2.5Y 8/2) lime coatings and olive yellow (2.5Y 6/8) silica coatings 0.5 to 1.0 millimeter thick on the underside of pebbles; 60 percent pebbles; violently effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.

Bqk4—23 to 31 inches; light olive gray (2.5Y 6/2) very gravelly loamy coarse sand, dark olive gray (2.5Y 3/2) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; light gray (10YR 7/2) lime coatings and very pale brown (10YR 7/4) silica coatings 0.5 to 1.0 millimeter thick on the underside of pebbles; 60 percent pebbles; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

Bqk5—31 to 60 inches; light olive gray (2.5Y 6/2) extremely gravelly loamy sand, dark olive gray (2.5Y 3/2) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; olive gray (10YR 7/2) lime coatings and very pale brown (10YR 7/4) silica coatings less than 1 millimeter thick on the underside of pebbles; 55 percent discontinuous weak silica cementation bridging pebbles; 65 percent pebbles and 5 percent cobbles; violently effervescent; strongly alkaline (pH 9.0).

Typical Pedon Location

Soil name and map unit in which located: Laxal gravelly fine sandy loam, 2 to 4 percent slopes, in Laxal association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 19 miles southeast of Austin, in the Big Smoky Valley; about 1,600 feet east and 550 feet north of the southwest corner of sec. 28, T. 16 N., R. 44 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively between July and October as a result of convection storms

Average annual soil temperature: 53 to 59 degrees F

Reaction: Strongly alkaline or very strongly alkaline

Effervescence: Strongly effervescent or violently effervescent

Other characteristics: Buried very gravelly clay loam Bt horizon or gravel layers present below a depth of 40 inches in some pedons

Control section:

Texture—dominantly stratified very gravelly fine sandy loam, sandy loam, coarse sandy loam, and loamy coarse sand and common thin strata of sand and clay loam; fine sandy loam, sandy loam, or coarse sandy loam when mixed

Content of rock fragments—averages 35 to 60 percent, mainly pebbles

A horizon:

Hue—10YR or 2.5Y
Value—6 or 7 dry, 3 to 5 moist
Chroma—2 or 3 dry, 2 to 4 moist
Structure—platy or massive

Bqk horizon:

Hue—10YR or 2.5Y
Value—6 or 7 dry, 3 to 5 moist
Chroma—2 or 3 dry, 2 to 4 moist
Other characteristics—discontinuous, weak, silica cementation bridging rock fragments at a depth of less than 40 inches in some pedons; lime and silica coatings and pendants common on the underside of rock fragments

Layview Series

Depth class: Shallow

Drainage class: Well drained

Parent material: Residuum derived from andesite, rhyolite, and tuff

Positions on landscape: Crests and shoulder slopes of mountains

Slope: 4 to 15 percent

Mean annual precipitation: About 14 inches

Mean annual temperature: About 42 degrees F

Taxonomic class: Loamy-skeletal, mixed Argic Lithic Cryoborolls

Typical Pedon

About 50 percent of the surface is covered with pebbles and 25 percent with cobbles and stones.

A—0 to 3 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine
Locane Series

Depth class: Shallow
Drainage class: Well drained
Parent material: Residuum derived from shale and tuffaceous or siliceous conglomerate
Positions on landscape: Side slopes of mountains
Slope: 2 to 50 percent
Mean annual precipitation: About 12 inches
Mean annual temperature: About 45 degrees F

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Xerolic Haplargids

Typical Pedon

About 40 percent of the surface is covered with pebbles and 10 percent with cobbles.

A1—0 to 4 inches; very pale brown (10YR 7/3) gravelly loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine vesicular pores; 30 percent pebbles; neutral (pH 7.2); abrupt smooth boundary.

A2—4 to 6 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 25 percent pebbles; neutral (pH 7.2); clear smooth boundary.

Bt1—6 to 9 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; few fine and medium roots; common very fine tubular pores; many thin and moderately thick clay films on faces of peds; 35 percent pebbles and 5 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt2—9 to 14 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, friable, very sticky and very plastic; few fine and medium roots; few very fine tubular pores; many thin and moderately thick clay films on faces of peds; 45 percent pebbles and 10 percent cobbles; neutral (pH 7.0); abrupt irregular boundary.

R—14 inches; hard, slightly fractured, tuffaceous conglomerate.

Typical Pedon Location

Soil name and map unit in which located: Locane gravelly loam, 8 to 15 percent slopes, in Locane-Coztur-Punchbowl association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 30 miles west of Austin; in an unsectionalized area about 700 feet south and 2,000 feet east of the northwest corner of the assumed sec. 26, T. 18 N., R. 38 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry late in June through October
Average annual soil temperature: 44 to 47 degrees F
Depth to bedrock: 10 to 20 inches
Reaction: Slightly acid or neutral

A horizon:
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 or 3
Structure—granular, platy, or subangular blocky
Consistence—slightly hard or hard (dry)

Bt horizon:
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4
Structure—weak to strong and angular blocky or subangular blocky, or massive
Thickness—7 to 15 inches
Content of clay—35 to 50 percent
Content of rock fragments—averages 35 to 50 percent

Loncan Series

Depth class: Moderately deep
Drainage class: Well drained
Parent material: Residueum and colluvium derived mainly from chert or sedimentary and volcanic rock
Positions on landscape: Side slopes of mountains
Slope: 15 to 50 percent
Mean annual precipitation: About 14 inches
Mean annual temperature: About 42 degrees F
Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Haploxerolls

Typical Pedon

About 30 percent of the surface is covered with pebbles and 5 percent with cobbles.
A1—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine interstitial pores; 25 percent pebbles and 5 percent cobbles; neutral (pH 6.8); clear smooth boundary.
A2—4 to 9 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate very fine granular structure; soft, very friable, sticky and plastic; common very fine roots; common very fine tubular pores; 30 percent pebbles; neutral (pH 6.8); clear smooth boundary.
A3—9 to 16 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, sticky and plastic; common medium and coarse roots; common very fine interstitial pores; 45 percent pebbles and 5 percent cobbles; neutral (pH 7.0); clear wavy boundary.
C—16 to 22 inches; pale brown (10YR 6/3) extremely gravelly loam, dark brown (10YR 4/3) moist; massive; soft, very friable, sticky and plastic; few fine roots; few very fine interstitial pores; 65 percent pebbles and 5 percent cobbles; neutral (pH 7.0); abrupt wavy boundary.
2R—22 inches; chert.

Typical Pedon Location

Soil name and map unit in which located: Loncan gravelly loam, 15 to 50 percent slopes, in Loncan-Gando-Glean association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 55 miles south of Beowawe; about 1,100 feet south and 2,000 feet east of the northwest corner of sec. 5, T. 22 N., R. 48 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry late in June to mid-October
Average annual soil temperature: 42 to 47 degrees F
Thickness of the mollic epipedon: 10 to 17 inches
Depth to bedrock: 21 to 38 inches
Other characteristics: AC horizon present in some pedons

Control section:
Texture—very gravelly loam, extremely cobbly loam, very gravelly sandy clay loam, or extremely gravelly loam
Content of clay—18 to 27 percent
Content of rock fragments—averages 50 to 70 percent pebbles and cobbles and very few stones
A horizon:
Value—4 or 5 dry
Chroma—2 or 3
Structure—platy, subangular blocky, or granular
C horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Content of rock fragments—40 to 70 percent pebbles and cobbles
Lopwash Series

**Depth class:** Very deep  
**Drainage class:** Well drained  
**Parent material:** Alluvium derived from various kinds of rock and loess  
**Positions on landscape:** Inset fans  
**Slope:** 0 to 4 percent  
**Mean annual precipitation:** About 10 inches  
**Mean annual temperature:** About 45 degrees F  

**Taxonomic class:** Loamy-skeletal, mixed, frigid Typic Camborthids

**Typical Pedon**

A—0 to 6 inches; light gray (10YR 7/2) loam, grayish brown (10YR 5/2) moist; weak medium platy structure; slightly hard, friable, nonsticky and nonplastic; few fine and medium roots; common very fine roots and few fine and medium vesicular pores; 10 percent pebbles; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bw—6 to 12 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots and few medium and very fine roots; common very fine and fine tubular pores and few fine vesicular pores; 10 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary.

C—12 to 19 inches; light brownish gray (10YR 6/2) very gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; few medium roots and common very fine and fine roots; common very fine and fine interstitial pores and few fine and medium tubular pores; 40 percent pebbles; lime coatings on the underside of pebbles; moderately alkaline (pH 8.4); clear smooth boundary.

Ck—19 to 60 inches; light brownish gray (10YR 6/2) very gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and medium roots; common very fine and fine interstitial pores and few fine and medium tubular pores; 40 percent pebbles; lime coatings on the underside of pebbles; slightly effervescent; strongly alkaline (pH 8.8).

**Range in Characteristics**

**Soil moisture content:** Moist in winter and early in spring, dry late in May to early in November  
**Average annual soil temperature:** 45 to 47 degrees F  
**Combined thickness of the A and Bw horizons:** 10 to 16 inches  
**Depth to carbonates:** 14 to 20 inches  

**Control section:**

- Content of clay—5 to 18 percent  
- Content of rock fragments—35 to 70 percent when mixed  

**A horizon:**

- Value—6 or 7 dry, 4 or 5 moist  
- Chroma—2 or 3  
- Reaction—moderately alkaline or strongly alkaline

**Bw horizon:**

- Value—5 or 6 dry, 4 or 5 moist  
- Chroma—3 or 4 moist  
- Texture—sandy loam, gravelly sandy loam, loam, or gravelly loam  
- Reaction—moderately alkaline or strongly alkaline

**C horizon:**

- Value—6 or 7 dry, 4 or 5 moist  
- Chroma—2 to 6  
- Texture (fraction less than 2 millimeters)—dominantly sandy loam, but loamy sand or sand in the lower part in some pedons  
- Content of rock fragments—35 to 70 percent, mostly pebbles  
- Reaction—moderately alkaline or strongly alkaline

**McConnel Series**

**Depth class:** Very deep  
**Drainage class:** Somewhat excessively drained  
**Parent material:** Alluvium that is derived from various kinds of rock and includes some loess and volcanic ash over lacustrine beach sediment or gravelly alluvium  
**Positions on landscape:** Inset fans, beach terraces, fan skirts, offshore bars  
**Slope:** 0 to 8 percent  
**Mean annual precipitation:** About 8 inches  
**Mean annual temperature:** About 50 degrees F  

**Taxonomic class:** Sandy-skeletal, mixed, mesic Xerollic Camborthids

**Typical Pedon Location**

**Soil name and map unit in which located:** Lopwash loam, 0 to 4 percent slopes, in Poorcal-Lopwash association  
**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 19 miles east of Austin; about 1,500 feet south and 500 feet west of the northeast corner of sec. 20, T. 19 N., R. 48 E.
A1—0 to 2 inches; grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure parting to weak very fine granular; soft, very friable, nonsticky and nonplastic; many fine and common medium roots; common very fine tubular pores; 10 percent pebbles; neutral (pH 7.2); abrupt smooth boundary.

A2—2 to 6 inches; light brownish gray (10YR 6/2) sandy loam, dark grayish brown (10YR 4/2) moist; weak thick platy structure parting to weak very fine granular; slightly hard, friable, slightly sticky and nonplastic; many fine and common medium roots; common very fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.

Bw—6 to 12 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; common very fine tubular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary.

2Bk1—12 to 19 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and medium roots; few very fine tubular pores; 55 percent pebbles; thin lime coatings on the underside of pebbles; slightly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

2Bk2—19 to 28 inches; light brownish gray (10YR 6/2) extremely gravelly loamy coarse sand, grayish brown (10YR 5/2) moist; single grain; nonsticky and nonplastic; common fine and medium roots; many fine interstitial pores; 65 percent pebbles; thin lime coatings on the underside of pebbles; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

2Bk3—28 to 60 inches; pale brown (10YR 6/3) extremely gravelly coarse sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few fine and medium roots; many fine interstitial pores; 70 percent pebbles; few thin lime coatings on the underside of pebbles; strongly effervescent; strongly alkaline (pH 8.8).

Typical Pedon Location

Soil name and map unit in which located: McConnel loam, 0 to 4 percent slopes, in Tulase-Bubes-McConnel association

Location in Nevada: Lander County, Nevada, North Part, survey area; about 38 miles southeast of Battle Mountain; about 1,500 feet north of the southeast corner of sec. 30, T. 26 N., R. 48 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in June through October

Average annual soil temperature: 50 to 54 degrees F

Depth to the 2Bk horizon: 10 to 20 inches

Control section:

Content of clay—averages as much as 5 percent
Content of rock fragments—averages 50 to 80 percent, mainly pebbles, but is as much as 70 percent in the upper part and 60 to 85 percent in the lower part
Texture—stratified very fine sandy loam to extremely gravelly sandy loam or sandy loam in the upper part; stratified very gravelly loamy sand to extremely gravelly coarse sand in the lower part

A horizon:

Hue—10YR or 2.5Y
Value—5 or 6 dry and 3 or 4 moist (5 dry and 3 moist occur only in the upper 3 inches)
Chroma—1 to 3
Structure—weak or moderate, thin to thick, and platy; weak or moderate, fine or medium, and granular; or massive
Reaction—neutral to moderately alkaline

Bw horizon:

Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 to 5 moist
Chroma—dominantly 2 to 4, but 1 when dark sand grains are present
Texture—loam, sandy loam, or fine sandy loam
Structure—very fine to medium and granular or subangular blocky, or massive
Reaction—neutral to moderately alkaline

2Bk, 3Bk, and 3C horizons:

Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 to 5 moist
Chroma—dominantly 2 to 4, but 1 when dark sand grains are present
Reaction—moderately alkaline to very strongly alkaline

McVegas Series

Depth class: Shallow to duripan
Drainage class: Well drained
Parent material: Residuum derived from metavolcanic and volcanic rock

Positions on landscape: Hills
Slope: 8 to 30 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 49 degrees F

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic, shallow Haplic Nadurargids

Typical Pedon

About 10 percent of the surface is covered with pebbles and 30 percent with cobbles.

A1—0 to 2 inches; light brownish gray (10YR 6/2) very cobbly loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few medium roots; many fine vesicular pores; 30 percent cobbles and 20 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary.

A2—2 to 5 inches; light brownish gray (10YR 6/2) cobbly loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; few medium roots; many very fine tubular pores; 15 percent pebbles and 15 percent cobbles; moderately alkaline (pH 8.4); abrupt smooth boundary.

B1n—5 to 10 inches; brown (10YR 5/3) very cobbly silty clay, dark brown (10YR 3/3; 10YR 4/3, crushed) moist; weak medium prismatic structure parting to strong fine and medium angular blocky; very hard, very firm, very sticky and very plastic; few medium roots; common fine tubular pores; continuous thick clay films on peds; 25 percent pebbles and 15 percent cobbles; strongly alkaline (pH 8.8); clear wavy boundary.

B1nk—10 to 19 inches; light yellowish brown (10YR 6/4) very cobbly silty clay, dark yellowish brown (10YR 3/4; 10YR 4/4, crushed) moist; moderate fine angular blocky structure; very hard, very firm, very sticky and very plastic; few medium roots; common very fine tubular pores; continuous thick clay films on peds; 25 percent pebbles and 20 percent cobbles; common medium lime filaments and threads; strongly effervescent; strongly alkaline (pH 9.0); abrupt irregular boundary.

Bqkm—19 to 22 inches; very pale brown (10YR 7/4), strongly cemented duripan capping bedrock and extending into cracks in the bedrock; some discontinuous indurated laminar deposits; 50 percent pebbles and 30 percent cobbles; strongly effervescent; abrupt smooth boundary.

R—22 inches; rhyolite.

Typical Pedon Location

Soil name and map unit in which located: McVegas very cobbly loam, 15 to 30 percent slopes, in McVegas-Stingdorn-Colbar association

Location in Nevada: Lander County, Nevada, North Part, survey area; about 30 miles northwest of Austin; in an unsectionalized area about 1,200 feet south and 1,100 feet west of the northeast corner of the assumed sec. 30, T. 24 N., R. 42 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in some part for short periods from October through May

Average annual soil temperature: 47 to 52 degrees F

Depth to strongly cemented duripan: 14 to 20 inches

Depth to bedrock: 15 to 35 inches

Control section:

Content of clay—35 to 45 percent
Content of rock fragments—35 to 60 percent, mainly cobbles

Reaction—moderately alkaline to very strongly alkaline, generally increasing in alkalinity with increasing depth

A horizon:

Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Structure—weak to moderate, thin or medium, and platy

B1nk horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—very cobbly silty clay, very cobbly clay, very cobbly silty clay loam, or very cobbly clay loam

Structure—weak to strong, fine to medium, and prismatic
Consistence—hard to very hard (dry), friable to very firm (moist)

Bqkm horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—4 to 6
Texture—very cobbly silty clay, very cobbly clay, very cobbly silty clay loam, or very cobbly clay loam

Structure—moderate or strong, fine or medium, and angular blocky or prismatic
Consistence—hard or very hard (dry), friable to very firm (moist)

Minat Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Colluvium that is derived from chert, shale, and mixed volcanic rock and includes some volcanic ash

Positions on landscape: Side slopes of hills and mountains
Slope: 30 to 50 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 47 degrees F

Taxonomic class: Loamy-skeletal, mixed, mesic Xerolic Camborthids

Typical Pedon

About 45 percent of the surface is covered with pebbles and 25 percent with cobbles.

A1—0 to 3 inches; pale brown (10YR 6/3) very cobbly sandy loam, brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common fine tubular pores; 30 percent pebbles and 20 percent cobbles; moderately alkaline (pH 7.8); gradual smooth boundary.

A2—3 to 9 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common fine tubular pores; 35 percent pebbles; moderately alkaline (pH 8.0); gradual wavy boundary.

Bw1—9 to 19 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; common fine tubular pores; 50 percent pebbles; moderately alkaline (pH 8.0); gradual wavy boundary.

Bw2—19 to 27 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots and few fine and medium roots; few fine tubular pores; 40 percent pebbles; effervescent in spots; lime coatings on the underside of pebbles; moderately alkaline (pH 8.4); gradual wavy boundary.

Bqk1—27 to 44 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, sticky and plastic; common very fine roots and few fine and medium roots; 50 percent pebbles; 15 percent weakly cemented durinodes; lime coatings on pebbles; strongly effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

Bqk2—44 to 60 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; many very fine roots; 50 percent pebbles; 15 percent weakly cemented durinodes; common medium soft lime masses and lime coatings on pebbles; strongly effervescent; strongly alkaline (pH 8.6).

Typical Pedon Location

Soil name and map unit in which located: Minat very cobbly sandy loam, 30 to 50 percent slopes, in Minat-Bojo-Stingdorn association

Location in Nevada: Lander County, Nevada, North Part, survey area; about 32 miles south of Battle Mountain; in an unsectionalized area about 2,600 feet south and 1,500 feet east of the northwest corner of the assumed sec. 6, T. 24 N., R. 42 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in winter and spring

Average annual soil temperature: 47 to 50 degrees F

Combined thickness of the A and Bw horizons: 20 to 30 inches

Depth to carbonates: 18 to 27 inches

Control section:

Content of clay—15 to 27 percent
Content of rock fragments—35 to 60 percent, mainly pebbles

A horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Reaction—mildly alkaline or moderately alkaline
Other characteristics—carbonate recharge in the A1 horizon in some pedons

Bw horizon:

Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4
Reaction—mildly alkaline or moderately alkaline

Bqk horizon:

Value—6 or 7 dry, 4 to 6 moist
Chroma—3 or 4
Other characteristics—as much as 15 percent weakly cemented durinodes
Reaction—moderately alkaline or strongly alkaline

Misad Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Alluvium or lakeshore sediment that is derived from various kinds of rock and includes some loess and volcanic ash

Positions on landscape: Fan skirts, inset fans, offshore bars

Slope: 0 to 4 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 48 degrees F

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Durothric Torriorthents

Typical Pedon
A1—0 to 3 inches; pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 3/3) moist; moderate thin and medium platy structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine roots; many very fine vesicular and tubular pores; 20 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

A2—3 to 7 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine vesicular and tubular pores; 30 percent pebbles; slightly effervescent; strongly alkaline (pH 9.0); clear wavy boundary.

Bq—7 to 14 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; common fine distinct relict iron mottles that are brown (7.5YR 5/4 and 4/4) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine roots and few fine and medium roots; many very fine tubular pores; 10 percent pebbles; 15 percent weakly cemented durinodes 5 to 15 millimeters in diameter; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary.

Bqk1—14 to 26 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 4/3) moist; common fine distinct relict iron mottles that are brown (7.5YR 5/4 and 4/2) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; very few very fine and fine roots; common very fine tubular pores; 25 percent pebbles; 35 percent weakly cemented or strongly cemented durinodes 5 to 30 millimeters in diameter; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

Bqk2—26 to 31 inches; pale brown (10YR 6/3) very gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; few fine distinct relict iron mottles that are brown (7.5YR 5/4 and 4/2) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; very few very fine roots; many very fine tubular pores; 45 percent pebbles; 10 percent weakly cemented durinodes 5 to 15 millimeters in diameter; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary.

2C—31 to 43 inches; pale brown (10YR 6/3) very gravelly loamy coarse sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; very few very fine roots; many very fine interstitial and tubular pores; 55 percent pebbles; strongly alkaline (pH 9.0); clear wavy boundary.

Typical Pedon Location
Map unit in which located: Misad gravelly sandy loam, strongly saline-sodic

Location in Nevada: Lander County, Nevada, North Part, survey area; about 2.6 miles southeast of Battle Mountain; in an unsectionalized area about 2,500 feet east and 1,000 feet south of the northwest corner of the assumed sec. 27, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture content: Moist in winter and early in spring, dry in summer and fall

Average annual soil temperature: 47 to 51 degrees F

Depth to the Bqk horizon: 8 to 25 inches

Depth to the unconformable 2C horizon: 20 to 35 inches

Other characteristics: Commonly calcareous, commonly noneffervescent in the upper part or the lower part, common relict iron mottles below a depth of 7 inches

Control section:
Texture—stratified sandy loam, fine sandy loam, very fine sandy loam, loamy coarse sand, and loamy sand
Content of rock fragments—35 to 50 percent, mainly pebbles

A horizon:
Hue—2.5Y or 10YR
Value—6 or 7 dry, 3 to 5 moist
Chroma—2 or 3

B horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—2 to 4
Other characteristics—10 to 40 percent weakly cemented to strongly cemented durinodes in the Bq horizon

2C horizon:
Texture—stratified loamy sand, sand, and loamy coarse sand
Content of rock fragments—50 to 70 percent, mainly pebbles
Effervescence—noneffervescent to strongly effervescent
Other characteristics—common discontinuous, weakly or strongly silica-cemented lenses between pebbles.

**Muni Series**

*Depth class:* Shallow to duripan  
*Drainage class:* Well drained  
*Parent material:* Mixed alluvium that is derived from volcanic rock and siliceous sedimentary rock and includes some loess and volcanic ash  
*Positions on landscape:* Fan piedmont remnants  
*Slope:* 2 to 8 percent  
*Mean annual precipitation:* About 10 inches  
*Mean annual temperature:* About 45 degrees F  
*Taxonomic class:* Loamy, mixed, mesic, shallow Haploxerolic Durargids

**Typical Pedon**

About 50 percent of the surface is covered with pebbles.

A—0 to 3 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; moderate very thick platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine vesicular pores; neutral (pH 7.2); clear wavy boundary.

AB—3 to 8 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; moderate thick platy structure parting to weak medium subangular blocky; soft, very friable, sticky and slightly plastic; common very fine and fine roots; few medium and many very fine and fine vesicular pores; neutral (pH 7.2); clear wavy boundary.

Bt1—8 to 13 inches; very pale brown (10YR 7/4) sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, sticky and slightly plastic; few very fine and fine roots; many thin clay films on pedds and in pores; mildly alkaline (pH 7.6); clear wavy boundary.

Bt2—13 to 18 inches; yellow (10YR 7/8) clay loam, yellowish brown (10YR 5/6) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; few fine roots; many moderately thick clay films on pedds and in pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary.

Bqkm—18 to 28 inches; very pale brown (10YR 8/4), strongly silica-cemented duripan, light yellowish brown (10YR 6/4) moist; massive; very hard, very firm; brittle; violently effervescent; moderately alkaline (pH 8/2); clear wavy boundary.

Cqk—28 to 32 inches; very pale brown (10YR 7/4) gravelly loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, slightly sticky and slightly plastic; 20 percent pebbles; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Cqkm—32 to 49 inches; very pale brown (10YR 8/3), strongly silica-cemented duripan, light yellowish brown (10YR 6/4) moist; massive; very hard, very firm; brittle; silica-cemented fragments in the upper part; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

2Ck—49 to 60 inches; very pale brown (10YR 7/3) very gravelly loamy sand, light yellowish brown (10YR 6/4) moist; single grain; loose, nonsticky and nonplastic; 45 percent pebbles; violently effervescent; strongly alkaline (pH 8.6).

**Typical Pedon Location**

*Soil name and map unit in which located:* Muni fine sandy loam, 2 to 8 percent slopes, in Muni-Orovada-Unius association  
*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 32 miles east of Austin, in the Monitor Valley; in an unsectionalized area about 0.4 mile west and 0.2 mile north of the southeast corner of the assumed sec. 29, T. 18 N., R. 47 E.

**Range in Characteristics**

*Soil moisture content:* Moist in some part from mid-October through June; dry in July to early in October  
*Average annual soil temperature:* 47 to 52 degrees F  
*Depth to the strongly cemented duripan:* 14 to 20 inches

**Control section (when mixed):**

- Content of clay—18 to 35 percent
- Content of rock fragments—0 to 15 percent pebbles

**A horizon:**

- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3

**Bt horizon:**

- Value—5 to 7 dry, 4 or 5 moist
- Chroma—4 to 6
- Texture—loam, clay loam, or sandy clay loam
- Reaction—neutral or mildly alkaline
- Other characteristics—as much as 20 percent pebbles in some strata in some pedons

**Bqkm horizon:**

- Effervescence—slightly effervescent to violently effervescent
Content of rock fragments—as much as 30 percent pebbles in some strata in some pedons
Cementation—continuous, strongly cemented plates alternating with weakly cemented or noncemented layers

2Ck horizon:
Value—5 to 7 dry, 4 to 6 moist
Chroma—2 to 4
Content of rock fragments—35 to 60 percent pebbles, as much as 5 percent cobbles

**Needle Peak Series**

*Depth class:* Very deep
*Drainage class:* Somewhat poorly drained
*Parent material:* Alluvium that is derived from various kinds of rock and includes some loess and volcanic ash

*Positions on landscape:* Inset fans, fan skirts
*Slope:* 0 to 2 percent
*Mean annual precipitation:* About 8 inches
*Mean annual temperature:* About 49 degrees F

*Taxonomic class:* Fine-silty, mixed (calcareous), mesic Aquic Torriorthents

**Typical Pedon**

A—0 to 3 inches; light brownish gray (2.5Y 6/2) silt loam, very dark grayish brown (2.5Y 3/2) moist; weak medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine roots; common very fine tubular pores; moderately alkaline (pH 8.0); abrupt smooth boundary.

C—3 to 8 inches; light gray (2.5Y 7/2) silt loam, dark grayish brown (2.5Y 4/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots and many very fine roots; common very fine tubular pores; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Ck1—8 to 16 inches; light gray (2.5Y 7/2) silt loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; common very fine tubular pores; few fine lime threads; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

Ck2—16 to 23 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; common fine distinct mottles that are yellowish brown (10YR 5/4) and brownish yellow (10YR 6/6) moist; massive; slightly hard, very friable, sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; few fine lime threads; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

C1—23 to 45 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; many fine and medium distinct mottles that are dark yellowish brown (10YR 4/6) and yellow (10YR 7/8) moist; massive; hard, friable, sticky and plastic; few very fine and fine roots; many very fine tubular pores; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

C2—45 to 60 inches; light gray (2.5Y 7/2) silt loam, grayish brown (2.5Y 5/2) moist; many coarse and medium faint and distinct mottles that are dark yellowish brown (10YR 4/4) and light yellowish brown (2.5Y 6/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; many very fine and few fine tubular pores; violently effervescent; strongly alkaline (pH 8.8).

**Typical Pedon Location**

*Soil name and map unit in which located:* Needle Peak silty loam in Needle Peak-Batan-Yobe association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 18 miles southeast of Austin; about 1,400 feet south and 400 feet west of the northeast corner of sec. 26, T. 16 N., R. 44 E.

**Range in Characteristics**

*Depth to the seasonal high water table:* 48 to 72 inches
*Average annual soil temperature:* 47 to 52 degrees F
*Depth to lime accumulation:* Less than 10 inches

*Other characteristics:* Mottles at a depth of more than 20 inches in most pedons

**Control section:**

Texture—silt loam or silty clay loam
Content of clay—20 to 35 percent

*A horizon:*

*Hue:* 10YR or 2.5Y
*Value:* 3 or 4 moist
*Chroma:* 2 or 3
*Structure:* Platy or subangular blocky
*Reaction:* Mildly alkaline to strongly alkaline

*Other characteristics:* Slightly effervescent in some pedons

**C horizon:**

*Hue:* 10YR or 2.5Y
*Value:* 6 to 8 dry, 4 to 6 moist
*Chroma:* 2 or 3
*Structure:* Angular blocky, subangular blocky, or massive
*Reaction:* Moderately alkaline to very strongly alkaline
Newlands Series

Depth class: Deep  
Drainage class: Well drained  
Parent material: Residuum and colluvium derived from rhyolite and andesite  
Slope: 8 to 15 percent  
Mean annual precipitation: About 15 inches  
Mean annual temperature: About 41 degrees F

Taxonomic class: Fine-loamy, mixed Argic Cryoborolls

Typical Pedon

About 10 percent of the surface is covered with pebbles. 5 percent with cobbles, 5 percent with stones, and 15 percent with boulders.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) bouldery loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine interstitial pores; 10 percent pebbles, 5 percent cobbles, and 5 percent stones; neutral (pH 6.8); abrupt smooth boundary.

A2—4 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common fine roots and few very fine and medium roots; common very fine interstitial pores; 10 percent pebbles; neutral (pH 6.8); abrupt smooth boundary.

Bt1—10 to 14 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots and few very fine and medium roots; common very fine and fine interstitial pores; few thin clay films on faces of ped; 20 percent pebbles; neutral (pH 7.0); clear wavy boundary.

Bt2—14 to 22 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate medium angular blocky; slightly hard, friable, sticky and plastic; few very fine and fine roots; few very fine and fine interstitial pores; common thin clay films on faces of ped; 25 percent pebbles; neutral (pH 7.0); gradual wavy boundary.

Bt3—22 to 35 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; common very fine and fine interstitial pores; few thin clay films on faces of ped; 30 percent pebbles; neutral (pH 7.0); clear smooth boundary.

Bt4—35 to 46 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; few fine roots; common fine interstitial pores; 55 percent pebbles; neutral (pH 7.2); abrupt broken boundary.

Cm—46 to 57 inches; light yellowish brown (10YR 6/4) saprolite, dark yellowish brown (10YR 4/4) variegated with reddish yellow (7.5YR 6/6) and strong brown (7.5YR 5/6) moist; massive; slightly hard, friable, sticky and plastic; neutral (pH 7.2); gradual wavy boundary.

R—57 inches; fractured, unweathered tuff.

Typical Pedon Location

Soil name and map unit in which located: Newlands extremely bouldery loam, 8 to 15 percent slopes, in Newlands-Packer-Hapgood association, strongly sloping

Location in Nevada: Lander County, Nevada, South Part, survey area; about 18 miles east of Austin; about 1,300 feet west of the northeast corner of sec. 35, T. 20 N., R. 46 E.

Range in Characteristics

Soil moisture content: Moist in some part in October to mid-July; dry late in summer to early in fall  
Average annual soil temperature: 41 to 45 degrees F  
Mean summer soil temperature: 56 to 59 degrees F  
Thickness of the mollic epipedon: 12 to 16 inches  

Depth to bedrock: 40 to 60 inches

A horizon:

Hue—10YR or 7.5YR  
Value—4 or 5 dry, 2 or 3 moist  
Chroma—2 or 3  
Structure—granular or subangular blocky

Bt2 horizon:

Hue—10YR or 7.5YR  
Value—5 or 6 dry, 3 to 5 moist  
Chroma—3 or 4  
Texture—clay loam or sandy clay loam  
Content of clay—averages 27 to 35 percent  
Content of rock fragments—averages 15 to 35 percent gravel  
Structure—subangular blocky, angular blocky, or prismatic

Newpass Series

Depth class: Moderately deep to duripan and bedrock  
Drainage class: Well drained  
Parent material: Residuum that is derived from volcanic and metavolcanic rock and includes some loess
Positions on landscape: Hills, mountains
Slope: 8 to 50 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 48 degrees F
Taxonomic class: Fine, montmorillonitic, mesic
Haploxerollic Nadurargids

Typical Pedon

About 75 percent of the surface is covered with pebbles and 10 percent with cobbles.
A—0 to 4 inches; light brownish gray (10YR 6/2) very gravelly fine sandy loam, dark grayish brown (10YR 4/2) moist; strong thick platy structure; slightly hard, very friable, slightly sticky and nonplastic; common fine and medium roots; few very fine and fine vesicular pores; 40 percent pebbles; mildly alkaline (pH 7.6); abrupt smooth boundary.

Bt1—4 to 7 inches; brown (7.5YR 4/4) clay, brown (7.5YR 4/4) moist; strong fine prismatic structure parting to strong fine angular blocky; hard, firm, very sticky and very plastic; many very fine roots and few fine and medium roots; common fine and medium tubular pores; continuous thick clay films on faces of peds and lining pores; 5 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary.

Bt2—7 to 14 inches; brown (7.5YR 4/4) clay, brown (7.5YR 4/4) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, hard, very firm, very sticky and very plastic; few fine and medium roots and common very fine exped roots; few fine and medium tubular pores; continuous thick clay films on faces of peds and lining pores; 10 percent pebbles; lime coatings on the underside of pebbles; moderately alkaline (pH 8.2); clear smooth boundary.

Btk—14 to 17 inches; dark yellowish brown (10YR 4/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, firm, very sticky and very plastic; few fine roots; common fine tubular pores; continuous moderately thick clay films on faces of peds and lining pores; 40 percent pebbles; common medium soft lime masses and thin lime and silica coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Bqk—17 to 24 inches; brown (7.5YR 5/4) very cobblely silty clay, brown (7.5YR 4/4) moist; massive; slightly hard, friable, very sticky and very plastic; few fine roots; common fine tubular pores; 30 percent weak discontinuous silica cementation; 15 percent pebbles and 40 percent cobbles; common medium soft lime masses and silica coatings on rock

fragments; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Bqkm—24 to 26 inches; strongly cemented duripan that has a thin discontinuous laminar cap; very hard, very firm; violently effervescent; clear wavy boundary.
R—26 inches; rhyolite.

Typical Pedon Location

Soil name and map unit in which located: Newpass very gravelly fine sandy loam, 15 to 30 percent slopes, in Newpass-Juniper association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 6 miles northwest of Austin; about 100 feet south and 400 feet west of the northeast corner of sec. 36, T. 20 N., R. 42 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in mid-June through October
Average annual soil temperature: 47 to 52 degrees F
Depth to the duripan: 20 to 29 inches
Depth to bedrock: 21 to 36 inches

Control section:

Content of clay—45 to 60 percent
Content of rock fragments—averages 15 to 35 percent, but is less than 15 percent, mainly pebbles, in the upper part and 25 to 50 percent, mainly pebbles and cobbles, in the lower part

A horizon:
Value—6 or 7 dry, 3 to 5 moist
Chroma—2 or 3
Structure—platy or subangular blocky
Reaction—mildly alkaline or moderately alkaline

Bt horizon:
Hue—10YR or 7.5YR
Value—dominantly 4 or 5 dry, but 6 in the upper part in some pedons; 3 or 4 moist
Chroma—3, 4, or 6
Reaction—moderately alkaline to very strongly alkaline, commonly increasing in alkalinity with increasing depth
Exchangeable sodium percentage: 15 to 30 in the upper part, 5 to 15 in the lower part

Ninemile Series

Depth class: Shallow
Drainage class: Well drained
Parent material: Residuum that is derived from andesite, basalt, and tuff and includes some volcanic ash
Positions on landscape: Stable side slopes of mountains
**Slope:** 15 to 30 percent
**Mean annual precipitation:** About 14 inches
**Mean annual temperature:** About 43 degrees F

**Taxonomic class:** Clayey, montmorillonitic, frigid Lithic Argixerolls

**Typical Pedon**

About 25 percent of the surface is covered with pebbles and 50 percent with cobbles and stones.

A1—0 to 4 inches; dark brown (10YR 4/3) extremely cobbly loam, dark brown (10YR 3/3) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine interstitial pores; 20 percent pebbles and 40 percent cobbles and stones; neutral (pH 7.0); abrupt wavy boundary.

A2—4 to 7 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate very fine and fine granular structure; slightly hard, friable, sticky and plastic; common fine roots and few very fine and medium roots; common very fine interstitial pores; 10 percent pebbles; neutral (pH 7.0); abrupt wavy boundary.

Bt1—7 to 14 inches; dark brown (10YR 4/3) clay, dark brown (10YR 3/3) moist; strong fine and medium prismatic structure; hard, firm, very sticky and very plastic; common medium and few fine exped roots along the faces of pedds; common fine and very fine tubular pores; common moderately thick clay films lining pores and on faces of pedds; 10 percent cobbles; neutral (pH 6.8); clear wavy boundary.

Bt2—14 to 19 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, very sticky and very plastic; few fine roots; few very fine tubular pores; many thick pressure faces; 10 percent cobbles; neutral (pH 6.8); abrupt wavy boundary.

R—19 inches; fractured andesite.

**Typical Pedon Location**

**Soil name and map unit in which located:** Ninemile extremely cobbly loam, 15 to 30 percent slopes, in Robson-Ninemile-Ravenswood association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 16 miles east of Austin; 1,300 feet north of the southwest corner of sec. 28, T. 19 N., R. 46 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and spring, dry mainly late in June to early in October

**Average annual soil temperature:** 44 to 47 degrees F

**Thickness of the mollic epipedon:** 6 to 15 inches (commonly includes part or all of the argillic horizon)

**Content of clay in the control section:** Averages 40 to 60 percent

**Reaction:** Slightly acid to mildly alkaline

**Depth to bedrock:** 10 to 20 inches

**Other characteristics:** The upper 1 to 3 inches of bedrock weathered in some pedons where the depth to bedrock is less than 15 inches

**A horizon:**
- **Value:** 3 to 5 dry, 2 or 3 moist
- **Chroma:** 1 to 3
- **Structure:** thin to thick and platy, or fine or medium and granular
- **Consistence:** soft or slightly hard (dry), nonsticky or slightly sticky and nonplastic to plastic (wet)
- **Reaction:** slightly acid to mildly alkaline
- **Other characteristics:** value of 6 in the upper 1 or 2 inches and massive in some pedons

**Bt horizon:**
- **Hue:** 5YR, 7.5YR, or 10YR
- **Value:** 3 to 6 dry, 3 or 4 moist
- **Chroma:** 2 to 4
- **Content of clay:** 40 to 60 percent
- **Texture:** clay or gravelly clay
- **Content of rock fragments:** 0 to 30 percent pebbles or cobbles
- **Structure:** moderate or strong and subangular blocky, angular blocky, or prismatic

**Nobuck Series**

**Depth class:** Very deep
**Drainage class:** Well drained
**Parent material:** Colluvium derived from various kinds of volcanic rock

**Positions on landscape:** Side slopes of mountains
**Slope:** 15 to 30 percent
**Mean annual precipitation:** About 10 inches
**Mean annual temperature:** About 44 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Xerolic Haplargids

**Typical Pedon**

About 35 percent of the surface is covered with pebbles and 25 percent with cobbles and stones.

A1—0 to 4 inches; light brownish gray (10YR 6/2) very cobbly loam, dark brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine
roots; common very fine and fine vesicular pores; 35 percent pebbles and 20 percent cobbles; neutral (pH 7.0); clear wavy boundary.

A2—4 to 7 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine interstitial pores; 40 percent pebbles; neutral (pH 7.0); gradual wavy boundary.

A3—7 to 12 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine interstitial pores; 35 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

Bt—12 to 23 inches; pale brown (10YR 6/3) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and few fine interstitial pores; common thin clay films on faces of peds; 35 percent pebbles, 5 percent cobbles, and 5 percent stones; mildly alkaline (pH 7.6); clear wavy boundary.

Btk1—23 to 32 inches; pale brown (10YR 6/3) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common fine interstitial pores; common thin clay films on faces of peds; 35 percent pebbles and 10 percent cobbles; few fine irregularly shaped lime seams and filaments; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Btk2—32 to 38 inches; pale brown (10YR 6/3) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and very plastic; common very fine and fine roots; common fine interstitial pores; many moderately thick clay films on faces of peds; 35 percent pebbles, 15 percent cobbles, and 5 percent stones; common medium irregularly shaped lime seams and filaments; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Bk—38 to 42 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/6) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common fine interstitial pores; 10 percent weak durinodes 5 to 15 millimeters in diameter; 35 percent pebbles, 15 percent cobbles, and 5 percent stones; few fine irregularly shaped lime seams and filaments; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bqk—42 to 60 inches; very pale brown (10YR 7/4) very gravelly loam, brownish yellow (10YR 6/6) moist; massive; hard, firm, sticky and nonplastic; few fine roots; few very fine interstitial pores; continuous weak silica and lime cementation and about 10 percent discontinuous strong silica and lime cementation; 35 percent pebbles, 15 percent cobbles, and 5 percent stones; violently effervescent; moderately alkaline (pH 8.0).

**Typical Pedon Location**

Soil name and map unit in which located: Nobuck very cobby loam, 15 to 30 percent slopes, in Punchbowl-Locane-Nobuck association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 16 miles east of Austin; about 650 feet west and 1,950 feet north of the southwest corner of sec. 6, T. 19 N., R. 46 E.

**Range in Characteristics**

Soil moisture content: Moist in some part in mid-October to mid-June; dry in mid-June to mid-October

Average annual soil temperature: 43 to 47 degrees F

Depth to the Btk horizon: 22 to 40 inches

Depth to the Bqk horizon: 40 to 60 inches

**Control section:**

Content of clay—25 to 35 percent

Content of rock fragments—35 to 60 percent, mainly pebbles

**A horizon:**

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Structure—platy or granular

Consistence—soft or slightly hard (dry), very friable or friable (moist)

Reaction—neutral or mildly alkaline

**Bt and Btk horizons:**

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Texture—very gravelly loam, very gravelly clay loam, or very gravelly sandy clay loam

Structure—prismatic, angular blocky, or subangular blocky

Reaction—mildly alkaline or moderately alkaline

Effervescence (matrix)—noneffervescent or slightly effervescent in the upper part, strongly
effervescent or violently effervescent in the lower part
Content of lime—few or common seams and filaments

Bqk horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3, 4, or 6
Texture—very gravelly sandy loam or very gravelly loam
Reaction—moderately alkaline or strongly alkaline
Other characteristics—continuous weak silica and lime cementation or 20 to 40 percent durinodes in a firm and brittle matrix

Novacan Series

Depth class: Moderately deep to duripan
Drainage class: Well drained
Parent material: Mixed volcanic alluvium
Positions on landscape: Fan piedmonts
Slope: 2 to 8 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 44 degrees F

Taxonomic class: Fine, montmorillonitic, mesic
Haploxerollic Durargids

Typical Pedon

About 10 percent of the surface is covered with pebbles and 25 percent with cobbles.

A1—0 to 3 inches; brown (10YR 5/3) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine interstitial pores; 15 percent pebbles and 15 percent cobbles; neutral (pH 7.2); abrupt wavy boundary.

A2—3 to 5 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine roots and common fine and medium roots; common very fine interstitial pores; 15 percent pebbles and 20 percent cobbles; mildly alkaline (pH 7.6); abrupt wavy boundary.

Bt1—5 to 11 inches; brown (7.5YR 4/4) gravelly clay, dark brown (7.5YR 3/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; common very fine exped roots and few fine and medium roots; common fine interstitial pores; common moderately thick clay films on faces of pebbles; 25 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

Bt2—11 to 18 inches; brown (7.5YR 5/4) clay, brown (7.5YR 4/4) moist; strong medium prismatic structure; hard, firm, very sticky and very plastic; few very fine, fine, and medium roots; common fine interstitial pores; common moderately thick clay films on faces of pebbles and lining pores; 10 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

Btk—18 to 24 inches; brownish yellow (10YR 6/6) gravelly clay loam, dark yellowish brown (10YR 4/6) moist; massive; hard, firm, very sticky and very plastic; common thin clay films bridging mineral grains; 30 percent pebbles; common fine seams and filaments or threads of lime; strongly effervescent; mildly alkaline (pH 7.8); clear wavy boundary.

Bqkm—24 to 45 inches; light yellowish brown (10YR 6/4), continuous, strongly cemented duripan, dark yellowish brown (10YR 3/4) moist; massive; very hard, very firm; 15 percent pebbles, 35 percent cobbles, and 10 percent stones; discontinuous thin laminar cap; common medium silica and lime coatings and pendants on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bqk—45 to 60 inches; pale brown (10YR 6/3) very cobbly loamy sand, brown (10YR 4/3) moist; massive; hard, firm, nonsticky and nonplastic; few very fine pores; 20 percent pebbles, 30 percent cobbles, and 5 percent stones; 50 percent discontinuous strong cementation; common fine concretions and seams of lime; common medium silica and lime coatings and pendants on the underside of rock fragments; strongly effervescent; strongly alkaline (pH 8.8).

Typical Pedon Location

Map unit in which located: Novacan cobbly loam, 2 to 8 percent slopes
Location in Nevada: Lander County, Nevada, South Part, survey area; about 18 miles east of Austin, in the Monitor Valley; about 1,550 feet south and 3,650 feet east of the northwest corner of sec. 6, T. 17 N., R. 47 E.

Range in Characteristics

Soil moisture content: Moist in some part from November through June; dry in July through October
Average annual soil temperature: 47 to 52 degrees F
Depth to the duripan and the base of the argillic horizon:
20 to 30 inches
Depth to carbonates: 14 to 24 inches
Other characteristics: Abrupt textural change occurs at the boundary between the A and B horizons

Control section:
Content of clay—45 to 60 percent
Content of rock fragments—10 to 25 percent, mainly pebbles

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Reaction—neutral or mildly alkaline

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—4 to 6
Reaction—mildly alkaline or moderately alkaline

Ocala Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Parent material: Siltly alluvium that is derived from various kinds of rock and includes some volcanic ash
Positions on landscape: Lake plains, alluvial flats
Slope: 0 to 2 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 50 degrees F
Taxonomic class: Fine-silty, mixed (calcareous), mesic Aeric Halaquepts

Typical Pedon

A1—0 to 2 inches; light gray (10YR 7/2) silt clay loam, brown (10YR 5/3) moist; moderate medium platy structure; slightly hard, friable, nonsticky and nonplastic; few fine roots; common fine vesicular pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary.
A2—2 to 6 inches; pale brown (10YR 6/3) silt clay loam, brown (10YR 4/3) moist; moderate fine granular structure; slightly hard, friable, sticky and plastic; common fine and medium roots; few fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary.
C—6 to 13 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; few fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); abrupt wavy boundary.
Cqk1—13 to 18 inches; white (10YR 8/2) silt loam, pale brown (10YR 6/3) moist; few medium faint mottles that are yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; few fine tubular pores; 15 percent weakly cemented durinodes; strongly effervescent; very strongly alkaline (pH 9.2); abrupt broken boundary.
Cqk2—18 to 26 inches; very pale brown (10YR 7/3), continuous, weakly silica-cemented silt loam, brown (10YR 5/3) moist; common medium faint mottles that are dark grayish brown (10YR 4/2) moist; massive; hard, firm, slightly sticky and slightly plastic; brittle; few fine roots; few fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary.
Cqk3—26 to 36 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; common medium faint mottles that are pale brown (10YR 6/3) and dark grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; weak fine tubular pores; 30 percent discontinuous weak cementation; strongly alkaline (pH 8.8); gradual wavy boundary.
Cqk4—36 to 60 inches; white (10YR 8/2), continuous, weakly silica-cemented silt loam, pale brown (10YR 6/3) moist; few medium faint mottles that are yellowish brown (10YR 5/4) moist; massive; very hard, very firm, slightly sticky and slightly plastic; brittle; few fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6).

Typical Pedon Location

Soil name and map unit in which located: Ocala silt clay loam, occasionally flooded, in Batan-Ocala-Ocala, rarely flooded, association
Location in Nevada: Lander County, Nevada, North Part, survey area; about 26 miles southeast of Battle Mountain; about 1,000 feet north and 500 feet east of the southwestern corner of sec. 19, T. 28 N., R. 48 E.

Range in Characteristics

Soil moisture content: Saturated to a depth of 40 inches for 1 month or more in most years
Average annual soil temperature: 50 to 54 degrees F
Depth to the weakly cemented horizon: 13 to 30 inches
Cementation: Weakly cemented layers present in some pedons, strata that are 20 to 70 percent durinodes in a friable matrix present above the weakly cemented layers in some pedons
Reaction: Strongly alkaline or very strongly alkaline
Content of salt and sodium: Generally strongly affected by salt and sodium in the upper 10 inches only, but areas that have been flood-irrigated affected below this depth
Depth to lime concretions: More than 35 inches in most pedons

Depth to iron mottles: More than 12 inches

Other characteristics: Strata or lenses of noncalcareous, mildly alkaline volcanic ash as much as 4 inches thick present in most pedons, generally below a depth of 30 inches

Control section:
Texture—dominantly silty clay loam or silt loam, but thin strata of clay loam, loam, or silt clay in some pedons
Content of clay—18 to 35 percent

A horizon:
Hue—10YR to 5Y
Value—6 to 8 dry, 4 to 7 moist
Chroma—1 to 3
Structure—granular or platy

C and Cqk horizons:
Hue—10YR to 5Y
Value—6 to 8 dry, 4 to 7 moist
Chroma—1 to 3
Structure—platy or massive

Old Camp Series

Depth class: Shallow
Drainage class: Well drained

Parent material: Residuum that is derived from basalt and andesite and includes some volcanic ash

Positions on landscape: Crests and side slopes of hills and mountains

Slope: 4 to 50 percent

Mean annual precipitation: About 10 inches

Mean annual temperature: About 47 degrees F

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Hapludalfs

Typical Pedon

About 50 percent of the surface is covered with pebbles.

A—0 to 2 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; 35 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.

Bt—2 to 5 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine granular structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; common very fine and fine interstitial pores; 45 percent pebbles and 10 percent cobbles; few moderately thick clay films on faces of ped; mildly alkaline (pH 7.8); clear smooth boundary.

Btk—5 to 11 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, friable, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; 50 percent pebbles and 5 percent cobbles; common moderately thick clay films on faces of ped and lining pores; few very thin lime coatings on the underside of rock fragments; mildly alkaline (pH 7.8); abrupt irregular boundary.

R—11 inches; fractured andesite; lime coatings in fractures.

Typical Pedon Location

Soil name and map unit in which located: Old Camp very gravelly loam, 15 to 30 percent slopes, in Old Camp-Minat-Osoll association

Location in Nevada: Lander County, Nevada, North Part, survey area; about 14 miles southwest of Battle Mountain; about 1,050 feet south of the northeast corner of sec. 22, T. 31 N., R. 42 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in November through May

Average annual soil temperature: 47 to 52 degrees F

Depth to bedrock: 10 to 20 inches

Content of rock fragments in the control section:
Dominantly 50 to 75 percent, mainly cobbles and stones, but 35 to 50 percent in the upper part in some pedons

A horizon:
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 or 3
Structure—weak and granular or platy, or massive
Reaction—neutral or mildly alkaline

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 7 dry, 3 to 5 moist
Chroma—2 to 4
Texture—dominantly clay loam or sandy clay loam, but strata of loam in some pedons
Content of rock fragments—averages 50 to 75 percent, mainly pebbles
Content of clay—27 to 35 percent
Structure—weak or moderate, fine to coarse, and angular blocky or subangular blocky
Reaction—neutral or mildly alkaline in the upper part, moderately alkaline or strongly alkaline in the lower part
Other characteristics—few to continuous lime coatings on rock fragments or bedrock

**Taxadjunct Features**

The Old Camp soils in this survey area are taxadjuncts because the rock fragments in the Bt horizon are mainly pebbles instead of the cobbles or stones that are typical for the series. This difference, however, does not significantly affect use and management.

**Orovada Series**

**Depth class:** Very deep  
**Drainage class:** Well drained  
**Parent material:** Loess that is high in content of volcanic ash over alluvium derived from various kinds of rock  
**Positions on landscape:** Fan skirts, fan aprons, inset fans  
**Slope:** 0 to 8 percent  
**Mean annual precipitation:** About 8 inches  
**Mean annual temperature:** About 47 degrees F  

**Taxonomic class:** Coarse-loamy, mixed, mesic Durixerollic Camborthids  

**Typical Pedon**

A1—0 to 4 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; strong coarse prismatic structure parting to moderate thin platy; slightly hard, very friable, slightly sticky and slightly plastic; many very fine random roots; many very fine vesicular, interstitial, and tubular pores; neutral (pH 7.2); abrupt wavy boundary.  

A2—4 to 8 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; weak coarse and very coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine random roots and few fine and medium oblique roots; common very fine tubular and interstitial pores; mildly alkaline (pH 7.8); clear wavy boundary.  

Bw—8 to 20 inches; light gray (10YR 7/2) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine random roots and very few very fine, fine, and medium oblique roots; common very fine tubular pores and many very fine interstitial pores; moderately alkaline (pH 7.8); clear wavy boundary.  

Bqk1—20 to 31 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine random roots and very few fine and medium oblique roots; common very fine tubular and interstitial pores; 25 percent moderately strong durinodes 10 to 30 millimeters in diameter; strongly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary.  

Bqk2—31 to 44 inches; light gray (10YR 7/2) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine random roots and very few fine and medium oblique roots; few very fine tubular pores and common very fine interstitial pores; 5 percent pebbles; 25 percent moderately strong durinodes 10 to 30 millimeters in diameter; strongly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary.  

Bqk3—44 to 65 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine tubular pores and common very fine interstitial pores; 5 percent pebbles; 15 percent moderately strong and strong durinodes 2 to 20 millimeters in diameter; strongly effervescent; strongly alkaline (pH 8.6).  

**Typical Pedon Location**

**Map unit in which located:** Orovada fine sandy loam, 2 to 4 percent slopes  
**Location in Nevada:** Lander County, Nevada, North Part, survey area; about 9 miles north of Battle Mountain; about 1,550 feet east and 1,400 feet north of the southwest corner of sec. 28, T. 34 N., R. 45 E.  

**Range in Characteristics**

**Soil moisture content:** Moist in winter and spring, dry late in June to early in November  
**Average annual soil temperature:** 47 to 52 degrees F  
**Depth to the Bq or Bqk horizon:** 10 to 28 inches  

**Control section:**

- Texture—dominantly stratified fine sandy loam, very fine sandy loam, loam, or silt loam with strata of loamy fine sand or sandy loam in some pedons  
- Content of clay—5 to 18 percent  
- Content of rock fragments—0 to 15 percent, mainly pebbles  

**A horizon:**

- **Hue**—10YR or 2.5Y  
- **Value**—5 to 7 dry and 3 or 4 moist (value of more than 5.5 dry and 3.5 moist occurs when the upper 7 inches is mixed)  
- **Chroma**—2 to 4  
- **Structure**—platy, prismatic, or massive  
- **Consistence**—soft or slightly hard  
- **Reaction**—neutral to moderately alkaline
**Bw horizon:**

- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 3 to 5 moist
- Chroma—2 to 6
- Texture—fine sandy loam, very fine sandy loam, loam, or silt loam
- Content of clay—5 to 18 percent
- Content of rock fragments—averages 0 to 15 percent pebbles
- Structure—subangular blocky, prismatic, or massive
- Reaction—mildly alkaline or moderately alkaline

**Bq or Bqk horizon:**

- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 3 to 5 moist
- Chroma—2 to 6
- Content of rock fragments—as much as 30 percent pebbles in some strata in some pedons
- Consistency—soft to hard, very friable or friable
- Reaction—moderately alkaline to very strongly alkaline, increasing in alkalinity with increasing depth
- Content of durinodes—20 to 80 percent
- Other characteristics—gypsum crystals below a depth of 37 inches in some pedons, duripan or very gravelly strata below a depth of 40 inches in some pedons

**Osoll Series**

**Depth class:** Shallow to duripan

**Drainage class:** Well drained

**Parent material:** Residuum and colluvium that is derived from various kinds of rock and includes some loess

**Positions on landscape:** Crests and side slopes of hills

**Slope:** 8 to 50 percent

**Mean annual precipitation:** About 7 inches

**Mean annual temperature:** About 50 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic, shallow Typic Durothids

**Typical Pedon**

About 30 percent of the surface is covered with pebbles.

- A—0 to 5 inches: light gray (10YR 7/2) gravelly loam, dark brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine vesicular pores; 30 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

- Bq—5 to 12 inches: very pale brown (10YR 7/3) very gravelly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine interstitial pores; 20 percent weak or moderate durinodes 5 to 20 millimeters in diameter; 30 percent pebbles and 15 percent cobbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

- Bqk—12 to 35 inches: very pale brown (10YR 7/4), cobbly, indurated duripan, yellowish brown (10YR 5/4) moist; strong thick plates alternating with massive strata; extremely hard, extremely firm; continuous fractured silica-cemented laminae on top of and in bands throughout the horizon alternating with discontinuous, strongly and weakly silica-cemented strata that are 20 percent hard silica and lime concretions 5 to 20 millimeters in diameter; violently effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary.

**Range in Characteristics**

**Soil moisture content:** Moist intermittently in winter and spring, dry late in May through November

**Average annual soil temperature:** 47 to 52 degrees F

**Depth to the duripan:** 8 to 14 inches

**Depth to bedrock:** 20 to 40 inches

**Control section:**

- Texture—very gravelly loam or very gravelly fine sandy loam
- Content of clay—10 to 18 percent
- Content of rock fragments—averages 35 to 60 percent, mostly pebbles and some cobbles

**A horizon:**

- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Reaction—mildly alkaline or moderately alkaline

**Bqk horizon:**

- Reaction—moderately alkaline or strongly alkaline
- Other characteristics—commonly as much as 30 percent weak to hard durinodes

**Typical Pedon Location**

**Soil name and map unit in which located:** Osoll gravelly loam, 2 to 8 percent slopes, in Laped-Colbar-Osoll association

**Location in Nevada:** Lander County, Nevada, North Part, survey area; about 52 miles southwest of Battle Mountain; about 800 feet north of the southwest corner of sec. 36, T. 24 N., R. 40 E.
**Oxcorel Series**

**Depth class:** Very deep  
**Drainage class:** Well drained  
**Parent material:** Alluvium that is derived from various kinds of rock and includes some loess  
**Positions on landscape:** Dissected summits and side slopes of fan piedmonts  
**Slope:** 2 to 15 percent  
**Mean annual temperature:** About 48 degrees F  
**Mean annual precipitation:** About 6 inches  

**Taxonomic class:** Fine, montmorillonitic, mesic Duric Natargids

**Typical Pedon**

About 30 percent of the surface is covered with pebbles.

A—0 to 6 inches; pale brown (10YR 6/3) gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine and medium roots; common fine and medium vesicular pores; 20 percent pebbles; strongly alkaline (pH 8.6); abrupt smooth boundary.

Bt1—6 to 14 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, very firm, very sticky and very plastic; few medium and fine exped roots and few fine inped roots; few fine and common medium tubular pores; continuous thick pressure faces; 10 percent pebbles; strongly alkaline (pH 8.6); clear smooth boundary.

Bt2—14 to 27 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; hard, firm, very sticky and very plastic; few fine and medium inped roots and common fine exped roots; common fine and medium and few very fine tubular pores; 5 percent pebbles; continuous moderately thick clay films on faces of peds and lining pores; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

Btqk—27 to 37 inches; yellowish brown (10YR 5/6) gravelly clay loam, dark yellowish brown (10YR 4/6) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few fine roots; few fine and medium tubular pores; 20 percent pebbles; common fine clay films on faces of peds and lining pores; 20 percent strongly cemented durinodes; common medium filaments or threads of lime; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

Bqk—37 to 60 inches; brown (10YR 5/3) very gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few fine roots; few fine tubular pores; 40 percent pebbles; 35 percent strong durinodes; 10 percent weak discontinuous cementation; moderate fine filaments or threads and soft masses of lime; violently effervescent; strongly alkaline (pH 8.8).

**Typical Pedon Location**

**Soil name and map unit in which located:** Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes, in Oxcorel-Wieland-Spasprey association  
**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 22 miles northwest of Austin; about 200 feet south and 1,000 feet west of the northeast corner of sec. 2, T. 22 N., R. 41 E.

**Range in Characteristics**

**Soil moisture content:** Usually dry, but moist for short periods in winter and early in spring  
**Average annual soil temperature:** 47 to 52 degrees F  
**Depth to the base of the matric horizon:** 20 to 40 inches  
**Depth to durinodes:** 20 to 34 inches  
**Other characteristics:** 0.5- to 2.0-inch-thick E horizon capping the Bt horizon in some pedons

**Control section:**

- Texture—clay or clay loam  
- Content of clay—35 to 50 percent  
- Content of rock fragments—0 to 10 percent pebbles  
- in the upper part, 10 to 20 percent pebbles in the lower part

**A horizon:**

- Value—6 or 7 dry, 3 to 5 moist  
- Chroma—2 or 3

**Bt horizon:**

- Hue—7.5YR or 10YR  
- Value—5 to 7 dry, 4 to 6 moist  
- Chroma—3 to 6 (chroma of 3 common in the upper part in some pedons)

**Reaction—moderately alkaline to very strongly alkaline**

**Other characteristics—noneffervescent to strongly effervescent in the upper part in the matrix, segregated lime common in the lower part in the matrix, commonly 10 to 30 percent durinodes in the lower part, gypsum present in the lower part in some pedons**

**Bqk horizon:**

- Value—5 to 7 dry, 4 to 6 moist  
- Chroma—3 to 6

**Content of rock fragments—35 to 60 percent**

- Texture—very gravelly sandy loam or very gravelly loam
Other characteristics—dominantly 20 to 60 percent weakly or strongly cemented durinodes and as much as 30 percent discontinuous weak cementation, but less than 20 percent durinodes in the upper part in some pedons

Packer Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Residue that is derived from chert, shale, quartzite, and extrusive volcanic rock and includes some loess and volcanic ash
Positions on landscape: Crests and side slopes of mountains
Slope: 8 to 75 percent
Mean annual precipitation: About 15 inches
Mean annual temperature: About 42 degrees F
Taxonomic class: Loamy-skeletal, mixed Argic Cryoborolls

Typical Pedon
About 70 percent of the surface is covered with pebbles and 20 percent with cobbles and stones.
A1—0 to 7 inches; brown (10YR 5/3) extremely gravely loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate fine granular; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; common very fine interstitial and tubular pores; 45 percent pebbles and 20 percent cobbles and stones; neutral (pH 6.8); clear smooth boundary.
A2—7 to 10 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, sticky and plastic; many very fine and fine roots and common medium roots; common very fine tubular pores; 20 percent pebbles and 30 percent cobbles and stones; neutral (pH 6.8); abrupt wavy boundary.
2Bt—10 to 21 inches; yellowish brown (10YR 5/4) extremely cobbly clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine tubular pores; common moderately thick clay films lining pores and on faces of pebbles; 25 percent pebbles, 30 percent cobbles, and 10 percent stones; neutral (pH 7.2); clear wavy boundary.
2C1—21 to 46 inches; brown (10YR 5/3) extremely cobbly loam, dark brown (10YR 4/3) moist; massive; soft, very friable, sticky and plastic; common fine and medium roots; common very fine interstitial pores; 30 percent pebbles, 35 percent cobbles, and 10 percent stones; neutral (pH 7.3); gradual wavy boundary.
2C2—46 to 60 inches; brown (10YR 5/3) extremely cobbly sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine interstitial pores; 30 percent pebbles, 35 percent cobbles, and 10 percent stones; neutral (pH 7.3).

Typical Pedon Location
Soil name and map unit in which located: Packer extremely gravely loam, 15 to 30 percent slopes, in Packer-Newlands association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 40 miles northeast of Austin; about 1,400 feet east of the southwest corner of sec. 14, T. 20 N., R. 46 E.

Range in Characteristics
Soil moisture content: Usually dry, but moist in October to late in June
Average annual soil temperature: 42 to 45 degrees F
Average summer soil temperature: 57 to 59 degrees F
Thickness of the mollic epipedon: 7 to 10 inches
(includes the upper part of the Bt horizon in some pedons)
Depth to the base of the Bt horizon: 9 to 21 inches
Depth to bedrock: 40 to more than 60 inches
Other characteristics: Thin BA and BC horizons common in some pedons

Control section:
Texture—extremely cobbly clay loam, extremely cobbly sandy clay loam, or extremely cobbly loam
Content of clay—averages 18 to 30 percent
Content of rock fragments—60 to 80 percent, including 25 to 60 percent pebbles, 20 to 40 percent cobbles, and as much as 10 percent stones

A horizon:
Chroma—2 or 3
Structure—weak or moderate, very fine, fine, or medium, and granular or subangular blocky
Consistence—soft or slightly hard (dry), very friable or friable (moist)

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Structure—weak or moderate, very fine, fine, or
medium, and angular blocky or subangular blocky, or massive
Consistence—slightly hard or hard (dry), slightly sticky to very sticky and slightly plastic to very plastic (wet)

C horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6
Texture—extremely cobbly loam, extremely cobbly fine sandy loam, extremely cobbly sandy loam, or extremely cobbly loamy sand
Content of rock fragments—25 to 50 percent pebbles, 20 to 35 percent cobbles, and as much as 10 percent stones
Consistence—soft to very hard (dry), very friable or friable (moist), slightly sticky or sticky and nonplastic to plastic (wet)

Paranat Series

Depth class: Very deep
Drainage class: Poorly drained, but drainage has been altered by stream entrenchment or channel realignment in some areas
Parent material: Siltly fluvial deposits
Positions on landscape: Flood plains
Slope: 0 to 2 percent
Mean annual precipitation: About 8 inches
Mean annual temperature: About 48 degrees F
Taxonomic class: Fine-silty, mixed (calcareous), mesic Fluvaquentic Haplaquolls

Typical Pedon

A1—0 to 3 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, sticky and plastic; many very fine and fine roots; many very fine interstitial pores; strongly effervescent; moderately alkaline (pH 8.2); clear boundary.
A2—3 to 11 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, sticky and plastic; many very fine and fine roots; many very fine interstitial pores; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.
AC—11 to 21 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; common fine distinct mottles that are dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine tubular and interstitial pores; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

C1—21 to 32 inches; white (10YR 8/1) silt loam, gray (10YR 5/1) moist; common fine and medium distinct mottles that are brown (10YR 5/3) moist; massive; soft, very friable, very sticky and plastic; strongly effervescent; 10 percent lime concretions; moderately alkaline (pH 8.0); clear wavy boundary.
C2—32 to 43 inches; white (10YR 8/1) silt loam, light gray (10YR 7/1) moist; many fine distinct mottles that are dark brown (10YR 4/3) moist and many coarse distinct mottles that are grayish brown (2.5Y 5/2) moist; massive; slightly hard, friable, very sticky and plastic; few very fine roots; common very fine tubular pores; slightly effervescent; 10 percent lime concretions; 35 percent lime concretions; moderately alkaline (pH 7.9).

Typical Pedon Location

Soil name and map unit in which located: Paranat silt loam, strongly saline, in Ocala-Sonoma-Paranat association
Location in Nevada: Landen County, Nevada, South Part, survey area; about 5 miles west of Austin; about 500 feet north and 4,000 feet west of the southeast corner of sec. 29, T. 19 N., R. 43 E.

Range in Characteristics

Soil moisture content: Dry in mid-summer and early in fall; moist late in fall, in winter and spring, and early in summer

Depth to an apparent seasonal high water table:
Commonly 18 to 40 inches in winter to early in summer, but some pedons have been drained
Average annual soil temperature: 47 to 52 degrees F
Thickness of the mollic epipedon: 10 to 20 inches
Reaction: Moderately alkaline or strongly alkaline, usually decreasing in alkalinity with increasing depth
Calcium carbonate equivalent: 1 to 10 percent
Exchangeable sodium percentage: 0 to 15

Control section:
Texture—dominantly stratified silty clay loam and silt loam, but thin strata of very fine sandy loam or silty clay in some pedons
Content of clay—18 to 35 percent
Content of rock fragments—less than 5 percent

A horizon:
Hue—10YR or 2.5Y
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2
Structure—prismatic, subangular blocky, platy, or granular
Other characteristics—one or more buried A horizons as much as 8 inches thick in some pedons

C horizon:
Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 7 moist
Chroma—1 to 4
Consistence—soft or slightly hard (dry), very friable or friable (moist)
Other characteristics—as much as 15 percent filaments, soft masses, or concretions of lime in the upper part in some pedons and as much as 40 percent below a depth of 40 inches in some pedons

**Perlor Series**

**Depth class:** Shallow
**Drainage class:** Well drained
**Parent material:** Loess over residuum derived from soft, tuffaceous sedimentary rock
**Positions on landscape:** Rolling crests and side slopes of hills
**Slope:** 8 to 15 percent
**Mean annual precipitation:** About 7 inches
**Mean annual temperature:** About 46 degrees F
**Taxonomic class:** Loamy, mixed (calcareous), mesic, shallow Typic Torriorthents

**Typical Pedon**

About 10 percent of the surface is covered with pebbles.

A1—0 to 3 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary.

A2—3 to 7 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine interstitial pores; 5 percent pebbles; slightly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

2C1—7 to 12 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine interstitial pores; 5 percent pebbles; strongly effervescent; strongly alkaline (pH 8.5); clear smooth boundary.

2C2—12 to 14 inches; very pale brown (10YR 7/3) gravelly sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common fine interstitial pores; 30 percent pebbles; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

Cr—14 inches; fractured, soft, tuffaceous sedimentary rock; few very fine roots along fractures.

**Typical Pedon Location**

**Soil name and map unit in which located:** Perlor very fine sandy loam in Genaw-Perlor-Puett association

**Location in Nevada:** Lander County, Nevada, North Part, survey area; about 30 miles southwest of Battle Mountain, in the Fish Creek Basin area; about 1,375 feet north and 1,450 feet west of the southeast corner of sec. 11, T. 27 N., R. 41 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and early in spring, dry in mid-May through November
**Average annual soil temperature:** 47 to 52 degrees F
**Depth to perlitic contact:** 10 to 14 inches
**Reaction:** Moderately alkaline or strongly alkaline, usually increasing in alkalinity with increasing depth

**Control section:**

Content of clay—averages 10 to 18 percent
Content of rock fragments—averages 5 to 20 percent pebbles, but as much as 30 percent in an individual horizon (as much as 20 percent are soft and platy in some pedons)

**A horizon:**
Hue—10YR or 2.5Y
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 or 3
Structure—subangular blocky, platy, or massive
Effervescence—dominantly non-effervescent or slightly effervescent, but strongly effervescent in some pedons

**C horizon:**
Value—6 or 7 dry, 4 to 6 moist
Chroma—2 or 3
Texture—loam, sandy loam, or gravelly sandy loam
Structure—subangular blocky or massive
Effervescence—slightly effervescent to violently effervescent

**Pineal Series**

**Depth class:** Very deep
**Drainage class:** Well drained
**Parent material:** Mixed gravelly alluvium
**Positions on landscape:** Fan piedmonts, fan aprons
**Slope:** 2 to 30 percent
**Mean annual precipitation:** About 9 inches
**Mean annual temperature:** About 48 degrees F
**Taxonomic class:** Loamy-skeletal, mixed, mesic

**Durixerollic Hapludands**

**Typical Pedon**

About 60 percent of the surface is covered with pebbles and 10 percent with cobbles.

A—0 to 5 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and nonplastic; few fine roots; common very fine and fine vesicular pores; 25 percent pebbles and 5 percent cobbles; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bt1—5 to 8 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine interstitial pores; few thin clay films on faces of peds; 35 percent pebbles and 15 percent cobbles; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bt2—8 to 11 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine, fine, and medium roots; common very fine interstitial pores; common thin and few moderately thick clay films on faces of peds; 10 percent weak durinodes 5 to 15 millimeters in diameter; 35 percent pebbles and 15 percent cobbles; few fine lime filaments; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bqk1—11 to 24 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine interstitial pores; 50 percent discontinuous weak silica cementation; 55 percent pebbles and 15 percent cobbles; many lime particles; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bqk2—24 to 33 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; many fine interstitial pores; 40 percent continuous weak silica cementation; 55 percent pebbles and 15 percent cobbles; common thin lime coatings on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk—33 to 60 inches; pale brown (10YR 6/3) extremely gravelly loamy sand, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; many fine interstitial pores; 60 percent pebbles and 10 percent cobbles; common thin lime coatings on the underside of rock fragments; slightly effervescent; moderately alkaline (pH 8.4).

**Typical Pedon Location**

**Map unit in which located:** Pineal gravelly loam, 2 to 4 percent slopes

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 15 miles northeast of Austin; about 650 feet south and 2,100 feet west of the northeast corner of sec. 17, T. 21 N., R. 46 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and spring, dry in mid-June through October

**Average annual soil temperature:** 47 to 52 degrees F

**Reaction:** Mildly alkaline or moderately alkaline

**A horizon:**

- Hue—10YR or 2.5Y
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3

**Bt horizon:**

- Value—5 or 6 dry
- Chroma—3 or 4
- Texture—very gravelly loam, very gravelly clay loam, or very gravelly sandy clay loam

**Content of clay—**25 to 35 percent

**Content of rock fragments—**35 to 60 percent, mostly pebbles

**Bqk horizon:**

- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3

- Texture—stratified very gravelly sandy loam to extremely gravelly sand
Content of rock fragments—35 to 70 percent, mostly pebbles

**Poorcal Series**

**Depth class:** Very deep  
**Drainage class:** Well drained  
**Parent material:** Alluvium derived dominantly from sedimentary rock with a component of loess and volcanic ash  
**Positions on landscape:** Inset fan remnants  
**Slope:** 0 to 4 percent  
**Mean annual precipitation:** About 10 inches  
**Mean annual temperature:** About 45 degrees F  
**Taxonomic class:** Coarse-loamy, mixed, frigid Durixerolic Calciorthids

**Typical Pedon**  
About 5 percent of the surface is covered with pebbles.  
A1—0 to 3 inches: light gray (10YR 7/2) loam, brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine vesicular pores; 5 percent pebbles; few fine filaments or threads of lime; strongly effervescent; moderately alkaline (pH 8.6); clear smooth boundary.

A2—3 to 5 inches: very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; moderate thick platy structure parting to weak medium subangular blocky; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; 5 percent pebbles; common fine filaments or threads of lime; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bw—5 to 9 inches: very pale brown (10YR 7/3) fine sandy loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; 5 percent pebbles; common fine filaments or threads of lime; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bqk1—9 to 19 inches: white (10YR 8/2) loam, very pale brown (10YR 7/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 5 percent pebbles; 50 percent very hard, very firm, strongly cemented durinodos; many fine filaments or threads of lime; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Bqk2—19 to 30 inches: light gray (10YR 7/2) gravelly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; few very fine tubular pores; 25 percent pebbles; 30 percent hard, firm, weakly cemented durinodos; common fine filaments or threads of lime; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

2Bqk3—30 to 52 inches: very pale brown (10YR 7/3) gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; 35 percent pebbles; 30 percent hard, firm, weakly cemented durinodos; few fine filaments or threads of lime; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

2Bqk4—52 to 62 inches: very pale brown (10YR 7/3) gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; 45 percent pebbles; 30 percent hard, firm durinodos; slightly effervescent; strongly alkaline (pH 8.8).

**Typical Pedon Location**  
**Soil name and map unit in which located:** Poorcal loam, 0 to 4 percent slopes, in Poorcal-Lopwash association  
**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 21 miles east of Austin; about 500 feet north and 1,500 feet west of the southeast corner of sec. 13, T. 19 N., R. 47 E.

**Range in Characteristics**  
**Soil moisture content:** Moist in winter and spring, dry in mid-June through October  
**Average annual soil temperature:** 45 to 47 degrees F  
**Depth to the calcic horizon:** 8 to 20 inches  
**Depth to the 2Bqk horizon:** 29 to 40 inches  
**Calcium carbonate equivalent in the calcic horizon:** 15 to 35 percent

**Control section:**  
Content of clay—5 to 18 percent  
Content of rock fragments—15 to 35 percent when mixed, mainly pebbles

**A horizon:**  
Value—5 to 7 dry, 3 or 4 moist  
Chroma—2 or 3  
Reaction—moderately alkaline or strongly alkaline  
Consistence—very friable or friable (moist)

**Bw horizon:**  
Value—5 to 7 dry, 3 to 5 moist  
Chroma—3 or 4
Texture—loam, sandy loam, or fine sandy loam  
Reaction—moderately alkaline or strongly alkaline  
Consistence—soft or slightly hard (dry)

Bqk horizon:  
Value—6 to 8 dry, 5 to 7 moist  
Chroma—2 to 4  
Texture—gravely sandy loam, loam, or gravelly loam  
Content of durinodes—20 to 50 percent  
Reaction—strongly alkaline or very strongly alkaline

2Bqk horizon:  
Value—6 to 8 dry, 5 to 7 moist  
Chroma—2 to 4  
Texture—very gravelly loamy sand, very gravelly sandy loam, or very gravelly loam  
Content of durinodes—20 to 40 percent

Puett Series

Depth class: Shallow  
Drainage class: Well drained  
Parent material: Residuum derived from tuff and tuffaceous sandstone  
Positions on landscape: Low hills  
Slope: 15 to 50 percent  
Mean annual precipitation: About 9 inches  
Mean annual temperature: About 47 degrees F  
Taxonomic class: Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents

Typical Pedon

About 25 percent of the surface is covered with pebbles, 10 percent with cobbles, and 2 percent with stones.  
A—0 to 4 inches; light brownish gray (10YR 6/2) gravelly sandy loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many fine tubular pores; 15 percent pebbles; lime coatings on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.  
C—4 to 15 inches; pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 4/3) moist; massive; soft, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine tubular pores; 30 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.  
Cr—15 inches; highly weathered tuff.

Typical Pedon Location

Soil name and map unit in which located: Puett gravelly sandy loam, 15 to 30 percent slopes, very stony, in Bioya-Shabliss-Puett association  
Location in Nevada: Lander County, Nevada, North Part, survey area; about 22 miles northeast of Battle Mountain; about 100 feet south and 2,000 feet east of the northwest corner of sec. 1, T. 35 N., R. 47 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in June through October  
Average annual soil temperature: 47 to 52 degrees F  
Depth to bedrock: 10 to 20 inches  
Reaction: Moderately alkaline or strongly alkaline  
Effervescence: Strongly effervescent or violently effervescent  
Other characteristics: Lime coatings on pebbles in the lower part in some pedons

Control section:  
Content of clay—5 to 10 percent  
Content of rock fragments—as much as 35 percent pebbles  
A horizon:  
Hue—10YR or 2.5Y  
Value—6 or 7 dry, 4 or 5 moist  
Chroma—2 to 4  
Structure—weak or moderate, thin to thick, and platy, or massive  
C horizon:  
Hue—10YR or 2.5Y  
Value—6 or 7 dry, 4 or 5 moist  
Chroma—2 to 4  
Texture of the fine-earth fraction—dominantly coarse sandy loam to loam, but ranges from loamy fine sand to loam; gravelly loam or gravelly sandy loam common in some pedons  
Structure—subangular blocky or massive

Pula Series

Depth class: Very deep  
Drainage class: Well drained  
Parent material: Alluvium derived from various kinds of rock  
Positions on landscape: Side slopes of fan piedmont remnants  
Slope: 15 to 50 percent  
Mean annual precipitation: About 10 inches  
Mean annual temperature: About 48 degrees F  
Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Xerollic Haplargids
Typical Pedon

About 45 percent of the surface is covered with pebbles and 30 percent with cobbles.

A—0 to 2 inches: brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable, sticky and plastic; common very fine and fine roots; common fine vesicular and tubular pores; 15 percent pebbles and 20 percent cobbles; mildly alkaline (pH 7.8); clear smooth boundary.

Bt1—2 to 6 inches: brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, very sticky and very plastic; common very fine and fine roots and few medium roots; common fine interstitial and tubular pores; common thin clay films on faces of peds and lining pores; 25 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.8); clear smooth boundary.

Bt2—6 to 10 inches; yellowish brown (10YR 5/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to moderate fine angular blocky; very hard, firm, very sticky and very plastic; common very fine and fine roots; common fine tubular pores; many moderately thick clay films on faces of peds and lining pores and common moderately thick clay films coating coarse fragments; 35 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.8); abrupt smooth boundary.

Bt3—10 to 16 inches: brown (10YR 5/3) extremely gravelly clay, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; very hard, firm, very sticky and very plastic; few very fine and fine roots; common very fine and many fine tubular pores; common moderately thick clay films on faces of peds and coating coarse fragments; 50 percent pebbles and 15 percent cobbles; mildly alkaline (pH 7.6); clear wavy boundary.

Bt4—16 to 24 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy clay, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; hard, friable, very sticky and very plastic; few very fine and fine roots; common fine tubular pores; common moderately thick clay films on faces of peds and coating coarse fragments; 45 percent pebbles and 20 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary.

C—24 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, sticky and plastic; few very fine and fine roots; few fine tubular pores; 55 percent pebbles and 20 percent cobbles; mildly alkaline (pH 7.8).

Typical Pedon Location

Soil name and map unit in which located: Pula very cobbly loam, 30 to 50 percent slopes, in Pula-Spike association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 28 miles north of Austin; 1,000 feet east and 2,600 feet south of the northwest corner of sec. 23, T. 23 N., R. 43 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in November through June

Average annual soil temperature: 47 to 51 degrees F

Combined thickness of the A and Bt horizons: 22 to 40 inches

Reaction: Slightly acid to mildly alkaline

Control section:

- Content of clay—35 to 55 percent
- Content of rock fragments—55 to 75 percent, mostly pebbles

A horizon:

- Value—5 or 6 dry, 2 or 3 moist
- Chroma—2 or 3
- Structure—platy, granular, or subangular blocky

Bt horizon:

- Hue—10YR or 7.5YR
- Value—4 to 6 dry, 3 or 4 moist
- Chroma—2, 3, 4, or 6
- Texture—very gravelly or extremely gravelly clay, sandy clay, or clay loam
- Structure—moderate or strong, fine or medium, and subangular blocky or prismatic

C horizon:

- Value—5 to 8 dry, 4 to 6 moist
- Chroma—2 to 4

Punchbowl Series

Depth class: Very shallow or shallow

Drainage class: Well drained

Parent material: Residuum derived from andesite, dacite, rhyolite, tuff, and some shale

Positions on landscape: Crests and side slopes of hills and mountains

Slope: 4 to 50 percent

Mean annual precipitation: About 9 inches

Mean annual temperature: About 45 degrees F

Taxonomic class: Loamy, mixed, frigid Lithic Xerolic Haplargids
Typical Pedon

About 25 percent of the surface is covered with pebbles and 5 percent with cobbles.

A1—0 to 3 inches: pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, sticky and plastic; few very fine roots; many very fine vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary.

A2—3 to 6 inches: pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure parting to moderate fine subangular blocky; slightly hard, friable, very sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; 15 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bt—6 to 10 inches: light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, friable, very sticky and very plastic; common very fine and fine roots and few medium roots; common very fine tubular pores; common thin clay films on faces of peds and lining pores and few moderately thick clay films on faces of peds; 30 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

R—10 inches; fractured andesite; soft lime in fractures.

Typical Pedon Location

Soil name and map unit in which located: Punchbowl loam, 15 to 30 percent slopes, in Punchbowl-Rock outcrop association

Location in Nevada: Lander County, Nevada, South Part, survey area: about 25 miles east of Austin; about 600 feet south and 600 feet east of the northwest corner of sec. 4, T. 19 N., R. 47 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in mid-June to early in November

Average annual soil temperature: 45 to 47 degrees F

Depth to bedrock: 8 to 14 inches

Reaction: Neutral to moderately alkaline, increasing in alkalinity with increasing depth

Control section:

- Content of clay—18 to 35 percent
- Content of rock fragments—15 to 35 percent

A horizon:

- Value—4 to 6 dry, 3 or 4 moist
- Chroma—3 or 4

Effervescence—noneffervescent to strongly effervescent in the lower part

Bt horizon:

- Hue—7.5YR or 10YR
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—gravelly loam, gravelly sandy clay loam, or gravelly clay loam
- Content of clay—25 to 35 percent
- Content of rock fragments—25 to 35 percent, mostly pebbles

Effervescence—noneffervescent to strongly effervescent in the matrix

Other characteristics—very thin lime coatings on the underside of rock fragments or few soft lime segregations in the lower part in some pedons; few thin discontinuous colloid coatings common on rock fragments in some pedons

Rasile Series

Depth class: Very deep

Drainage class: Well drained

Parent material: Silty alluvium derived from loess and various kinds of rock

Positions on landscape: Beach terraces, inset fans, fan skirts

Slope: 0 to 2 percent

Mean annual precipitation: About 8 inches

Mean annual temperature: About 46 degrees F

Taxonomic class: Coarse-silty, mixed, mesic Durixerollic Camborthids

Typical Pedon

A1—0 to 2 inches: pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; mildly alkaline (pH 7.6); abrupt smooth boundary.

A2—2 to 6 inches: pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; mildly alkaline (pH 7.6); clear smooth boundary.

Bw—6 to 15 inches: pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots and few medium roots; common very fine
tubular and interstitial pores; mildly alkaline (pH 7.8); clear wavy boundary.

Bq—15 to 24 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 20 percent weakly cemented durinodes 5 to 15 millimeters in diameter; moderately alkaline (pH 8.2); clear wavy boundary.

Bqk1—24 to 33 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 40 percent strongly cemented durinodes 5 to 15 millimeters in diameter; common fine lime filaments and threads; slightly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bqk2—33 to 60 inches; very pale brown (10YR 7/3) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; 25 percent weakly cemented durinodes 10 to 25 millimeters in diameter; few fine lime filaments and threads; slightly effervescent; strongly alkaline (pH 8.6).

Typical Pedon Location

Soil name and map unit in which located: Rasille silt loam. 0 to 2 percent slopes, in McConnel-Rasille-Wholan association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 22 miles east of Austin; in an unsectionalized area about 1,000 feet south and 1,000 feet east of the southwest corner of the assumed sec. 2, T. 19 N., R. 40 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in mid-June through October

Average annual soil temperature: 47 to 52 degrees F

Depth to carbonates: 12 to 24 inches

Depth to the Bq or Bqk horizon: 12 to 24 inches

Other characteristics: Bq or Bqk horizon has 20 to 50 percent durinodes in a friable matrix

Other characteristics: Some pedons have gravelly strata below a depth of 40 inches

Control section:

Texture—silt loam or very fine sandy loam that is less than 15 percent fine sand or coarser textured material

Content of clay—10 to 18 percent

A horizon:

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Reaction—neutral or mildly alkaline

Bw horizon:

Chroma—3 or 4

Reaction—mildly alkaline or moderately alkaline

Bqk horizon:

Value—6 to 8 dry, 4 to 6 moist

Chroma—2 to 4

Reaction—moderately alkaline to very strongly alkaline

Ravenswood Series

Depth class: Moderately deep

Drainage class: Well drained

Parent material: Colluvium and residuum derived from volcanic, metavolcanic, and metamorphic rock

Positions on landscape: Side slopes of mountains

Slope: 15 to 50 percent

Mean annual precipitation: About 14 inches

Mean annual temperature: About 42 degrees F

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Typic Argixerolls

Typical Pedon

About 65 percent of the surface is covered with pebbles, 10 percent with cobbles, and 3 percent with stones.

A1—0 to 3 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine vesicular pores; 15 percent pebbles and 5 percent cobbles; neutral (pH 7.2); abrupt smooth boundary.

A2—3 to 9 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; many very fine tubular pores; 10 percent pebbles; neutral (pH 7.2); clear smooth boundary.

Bt1—9 to 13 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common very fine tubular pores; many thin and common moderately thick clay films on faces of pedds; 30 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.
Bt2—13 to 29 inches; yellowish brown (10YR 5/4) very gravelly clay, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few fine and medium roots; few very fine tubular pores; many moderately thick clay films in pores and on faces of pedes; 40 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

Bt3—29 to 36 inches; light yellowish brown (10YR 6/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to strong medium angular blocky; hard, firm, very sticky and very plastic; few coarse roots; few fine tubular pores; many pressure faces; 25 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.6); abrupt irregular boundary.

R—36 inches; fractured, welded tuff.

**Typical Pedon Location**

**Soil name and map unit in which located:** Ravenswood gravelly loam, 15 to 50 percent slopes, very stony, in Ravenswood-Itca-Walti association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 35 miles southwest of Austin; about 1,000 feet north and 500 feet east of the southwest corner of sec. 7, T. 15 N., R. 38 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and spring, dry for 45 to 90 days consecutively in mid-July through October

**Average annual soil temperature:** 43 to 47 degrees F (more than 41 degrees from May through November)

**Thickness of the mollic epipedon:** 10 to 16 inches (includes the upper part of the argillic horizon)

**Thickness of the solum and depth to unweathered bedrock:** 30 to 40 inches

**Reaction:** Slightly acid to mildly alkaline, increasing in alkalinity with increasing depth

**Control section:**

- Content of clay—35 to 50 percent
- Content of rock fragments—35 to 60 percent, mainly pebbles and cobbles

**A horizon:**

- **Value:** 4 or 5 dry, 2 or 3 moist
- **Chroma:** 2 or 3

**Bt horizon:**

- **Hue:** 10YR or 7.5YR
- **Value:** 5 dry in the upper part and 5 or 6 dry in the lower part, 3 moist in the upper part and 3 to 5 moist in the lower part

**Chroma—**3 in the upper part; 3, 4, or 6 in the lower part

**Texture—**very gravelly clay loam in the upper part, very gravelly clay or very gravelly clay loam in the lower part

**Structure—**angular blocky in the upper part, angular blocky or prismatic in the lower part

**Relley Series**

**Depth class:** Very deep

**Drainage class:** Well drained

**Parent material:** Mixed silty alluvium that is derived mainly from volcanic rock and includes some loess and volcanic ash

**Positions on landscape:** Fan skirts, inset fans

**Slope:** 0 to 2 percent

**Mean annual precipitation:** About 7 inches

**Mean annual temperature:** About 49 degrees F

**Taxonomic class:** Fine-silty, mixed, mesic Duric Camborthids

**Typical Pedon**

**Ap—**0 to 4 inches; light gray (2.5Y 7/2) silt loam, dark grayish brown (2.5Y 4/2) moist; weak coarse and very coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few very fine roots; many very fine vesicular and tubular pores; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

**A—**4 to 8 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate coarse prismatic structure parting to moderate thin and medium platy; slightly hard, very friable, slightly sticky and plastic; common very fine roots and few fine and medium roots; many very fine vesicular, interstitial, and tubular pores; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

**Bw—**8 to 16 inches; very pale brown (10YR 7/3) silt loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and plastic; common very fine roots; many very fine and few fine tubular pores; moderately alkaline (pH 8.4); clear wavy boundary.

**Bqk1—**16 to 21 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and plastic; common very fine and few fine roots; common very fine tubular pores; 25 percent weakly or strongly silica-cemented durinodes 5 to 40 millimeters in diameter; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.
Bqk2—21 to 28 inches; very pale brown (10YR 8/3) silt loam. light yellowish brown (10YR 6/4) moist; weak or moderate thin platy structure; slightly hard, friable, slightly sticky and plastic; common very fine and few fine roots; common very fine tubular pores; 10 percent weak durinodes; 40 percent discontinuous weak silica cementation; violently effervescent; many medium white (10YR 8/1, moist) and very pale brown (10YR 8/3, moist) coatings of lime on peds; strongly alkaline (pH 8.6); clear wavy boundary.

Bk1—28 to 52 inches; very pale brown (10YR 7/3) silt loam. dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; violently effervescent; common fine filaments or threads and small isolated pockets of lime; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bk2—52 to 63 inches; very pale brown (10YR 7/3) silt loam. brown (10YR 4/3) moist; common fine distinct brown (7.5YR 5/4) mottles, common fine faint dark brown (10YR 3/3) moist; massive; slightly hard, friable, slightly sticky and plastic; few very fine roots; many very fine tubular pores; violently effervescent; common fine filaments or threads of lime; moderately alkaline (pH 8.4).

**Typical Pedon Location**

*Map unit in which located:* Relley silt loam

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 52 miles southwest of Battle Mountain; about 660 feet south and 530 feet east of the northwest corner of sec. 12, T. 24 N., R. 40 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry late in May through November

*Average annual soil temperature:* 47 to 53 degrees F

*Content of clay in the control section:* 18 to 27 percent

*Depth to the Bqk horizon:* 11 to 24 inches

*Content of salt and sodium:* Generally moderately or strongly affected by salt and sodium at a depth of more than 30 inches

*Other characteristics:* Common, faint or distinct, relict mottles at a depth of more than 16 inches; volcanic ash layer 4 to 8 inches thick commonly at a depth of 16 to 45 inches; coarse sandy loam at a depth of more than 50 inches in some pedons

**A horizon:**

*Value:* 6 or 7 dry

*Consistence:* Slightly hard or hard (dry), very friable or friable (moist)

*Reaction:* Moderately alkaline or strongly alkaline

**Bw horizon:**

*Value:* 6 or 7 dry

*Chroma:* 2 or 3 dry, 3 or 4 moist

*Consistence:* Slightly hard or hard, very friable or friable

*Reaction:* Moderately alkaline or strongly alkaline

**Bq, Bk, or Bqk horizons (when present):**

*Value:* 5 to 8 dry, 4 to 6 moist

*Chroma:* 2 to 4

*Texture:* Dominantly silt loam, but strata of very fine sandy loam or silty clay loam in some pedons

*Structure:* Platy or massive

*Reaction:* Moderately alkaline to very strongly alkaline

*Effervescence:* Strongly effervescent or violently effervescent

*Other characteristics:* 20 to 50 percent weakly or strongly cemented durinodes; 4- to 7-inch-thick layer that has 30 to 50 percent discontinuous weak silica cementation, is hard and brittle, and commonly is at a depth of 16 to 34 inches; continuous, weakly or strongly cemented hardpan at a depth of more than 50 inches in some pedons

**Relucan Series**

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from tuff, and other intrusive rock

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 12 inches

*Mean annual temperature:* About 44 degrees F

*Taxonomic class:* Fine-loamy, mixed, frigid Aridic Argixerolls

**Typical Pedon**

About 15 percent of the surface is covered with pebbles and 5 percent with cobbles.

A1—0 to 2 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine vesicular pores; 15 percent pebbles; neutral (pH 7.2); clear smooth boundary.

A2—2 to 13 inches; dark grayish brown (10YR 4/2) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; 15 percent pebbles;
mildly alkaline (pH 7.6); clear smooth boundary.

Bt1—13 to 23 inches: light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; few thin clay films on faces of ped and in pores; 15 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.

Bt2—23 to 38 inches: light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; 30 percent pebbles; mildly alkaline (pH 7.6); abrupt wavy boundary.

2R—38 inches; rhyolitic tuff.

**Typical Pedon Location**

**Soil name and map unit in which located:** Reluctan gravelly loam, 15 to 30 percent slopes, in Millerlux-Reluctan-Cleavage association

**Location in Nevada:** Lander County, Nevada, North Part, survey area; near Maysville Summit, about 14 miles southeast of Battle Mountain; about 2,000 feet south and 500 feet west of the northeast corner of sec. 7, T. 29 N., R. 46 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and spring, dry in July through October

**Average annual soil temperature:** 44 to 47 degrees F

**Thickness of the mollic epipedon:** 7 to 17 inches

(commonly includes part of the argillic horizon)

**Thickness of the solum:** 20 to 40 inches

**Depth to bedrock:** 20 to 40 inches

**A horizon:**

Value—4 or 5 dry
Chroma—2 or 3
Reaction—neutral or mildly alkaline

**Bt horizon:**

Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—gravelly loam or gravelly clay loam
Content of clay—25 to 35 percent
Content of rock fragments—15 to 35 percent, mainly pebbles
Reaction—neutral or mildly alkaline, commonly increasing in alkalinity with increasing depth

**Ricert Series**

**Depth class:** Very deep
**Drainage class:** Well drained

**Parent material:** Thin loess deposits over alluvium derived from various kinds of rock

**Positions on landscape:** Fan piedmonts

**Slope:** 2 to 15 percent

**Mean annual precipitation:** About 7 inches

**Mean annual temperature:** About 48 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic Duric Natrargids

**Typical Pedon**

About 90 percent of the surface is covered with pebbles.

A1—0 to 4 inches: pale brown (10YR 6/3) very gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate very thin platy structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; many very fine interstitial pores and few fine and medium vesicular pores; 35 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary.

A2—4 to 7 inches: pale brown (10YR 6/3) gravelly very fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common very fine and fine roots and few medium roots; common very fine and few fine and medium tubular pores; 25 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary.

Bt1n—7 to 11 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; many fine roots and few very fine and medium roots; common very fine and few fine interstitial pores and few very fine and medium tubular pores; 5 percent pebbles; common moderately thick clay films on faces of ped; strongly alkaline (pH 8.8); clear wavy boundary.

Btkn—11 to 14 inches; yellowish brown (10YR 5/6) loam, dark yellowish brown (10YR 4/6) moist; weak medium prismatic structure parting to moderate fine subangular blocky; slightly hard, friable, sticky and slightly plastic; common very fine and fine roots and few medium roots; common fine and few very fine and medium tubular pores; common thin clay films on faces of ped; 10 percent pebbles; few fine lime filaments or threads; strongly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary.

Bq—14 to 20 inches: very pale brown (10YR 7/4) loam, yellowish brown (10YR 5/6) moist; massive; hard, firm, nonsticky and nonplastic; few fine and medium roots; few fine tubular pores; 15 percent pebbles; continuous weak silica cementation;
common fine lime filaments or threads; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary.

2Bk1—20 to 31 inches; very pale brown (10YR 7/4) very gravelly sandy loam, yellowish brown (10YR 5/6) moist; massive; soft, very friable, nonsticky and nonplastic; many fine interstitial pores; 35 percent pebbles and 10 percent cobbles; common fine lime filaments or threads and lime coatings on the underside of pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

2Bk2—31 to 60 inches; very pale brown (10YR 8/4) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, nonsticky and nonplastic; many fine interstitial pores; 25 percent pebbles and 10 percent cobbles; common fine lime filaments or threads and lime coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.8).

Typical Pedon Location

Soil name and map unit in which located: Ricert very gravelly very fine sandy loam, 2 to 4 percent slopes, in Ricert-Orovada-Broyles association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 17 miles southwest of Austin; about 2,000 feet north and 1,300 feet east of the southwest corner of sec. 3, T. 17 N., R. 41 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in mid-May through November

Average annual soil temperature: 47 to 52 degrees F

Depth to the Bk horizon: 14 to 25 inches

Depth to the 2Bk horizon: 20 to 40 inches

Control section:
- Content of clay—25 to 35 percent
- Content of rock fragments—0 to 10 percent, mainly pebbles

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4

Btk and Btkn horizons:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—3, 4, or 6
- Texture—loam or clay loam
- Reaction—strongly alkaline or very strongly alkaline
- Exchangeable sodium percentage—15 to 35

Bqk horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—3, 4, or 6
- Texture—loam, silt loam, or clay loam

Reaction—strongly alkaline or very strongly alkaline

2Bk and 2Bky horizons (when present):
- Texture—dominantly very gravelly sandy loam, very gravelly loamy sand, or extremely gravelly loamy sand, but strata of coarse sand in some pedons
- Content of rock fragments—30 to 70 percent, mainly pebbles, commonly increasing with increasing depth
- Reaction—strongly alkaline or very strongly alkaline
- Other characteristics—gypsum absent in many pedons

Robson Series

Depth class: Shallow

Drainage class: Well drained

Parent material: Residuum derived from igneous rock

Positions on landscape: Crests and side slopes of hills and mountains

Slope: 8 to 30 percent

Mean annual precipitation: About 15 inches

Mean annual temperature: About 43 degrees F

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Xerolic Hapludands

 Typical Pedon

About 30 percent of the surface is covered with pebbles and 50 percent with cobbles and stones.

A—0 to 2 inches; grayish brown (10YR 5/2) very cobbly loam, dark brown (10YR 3/3) moist; moderate thin platy structure parting to moderate fine granular; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine vesicular pores; 10 percent pebbles, 40 percent cobbles, and 5 percent stones; neutral (pH 6.8); abrupt smooth boundary.

Bt1—2 to 5 inches; pale brown (10YR 6/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; few fine clay films on faces of pedds; 10 percent pebbles and 35 percent cobbles; mildly alkaline (pH 7.6); abrupt smooth boundary.

Bt2—5 to 15 inches; pale brown (10YR 6/3) very cobbly clay, dark brown (10YR 4/3) moist; strong medium and coarse angular blocky structure; hard, firm, very sticky and very plastic; few very fine roots; common very fine tubular pores; many moderately thick clay films on faces of pedds and lining pores; 20 percent
pebbles and 35 percent cobbles; mildly alkaline (pH 7.8): clear irregular boundary.
R—15 inches; fractured andesite.

**Typical Pedon Location**

*Soil name and map unit in which located:* Robson very cobbly loam, 15 to 30 percent slopes, in Zoesta-Robson-Softscrabble association

*Location in Nevada:* Lander County, Nevada, South Part. survey area; about 1,500 feet east and 750 north of the southwest corner of sec. 29, T. 20 N., R. 47 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry late in June through October

*Average annual soil temperature:* 44 to 47 degrees F

*Depth to bedrock:* 12 to 20 inches

*Control section:*

- Content of clay—40 to 50 percent
- Content of rock fragments—50 to 75 percent when mixed, mainly cobbles

*A horizon:*

- Hue—7.5YR or 10YR
- Value—5 or 6 dry (value of 5.5 dry occurs when the upper 7 inches is mixed); 3 or 4 moist
- Chroma—2 or 3
- Structure—very thin or thin and platy, or very fine to medium and subangular blocky or granular

*Bt horizon:*

- Hue—7.5YR or 10YR
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—3 or 4
- Structure—weak to strong, very fine to coarse, and prismatic, subangular blocky, or angular blocky
- Reaction—neutral or mildly alkaline
- Other characteristics—the upper few inches of bedrock commonly fractured into angular, cobble- or pebble-sized fragments

**Roca Series**

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from shale and chert

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 43 degrees F

*Taxonomic class:* Clayey-skeletal, montmorillonitic, frigid Xerollic Haplargids

**Typical Pedon**

About 45 percent of the surface is covered with pebbles.

*A—0 to 5 inches; light brownish gray (10YR 6/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores and common very fine vesicular pores; 40 percent pebbles and 1 percent cobbles; neutral (pH 7.2); clear smooth boundary.

*Bt1—5 to 10 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 3/3) moist; weak very fine and fine subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and common fine roots; many very fine tubular pores; 35 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary.

*Bt2—10 to 18 inches; yellowish brown (10YR 5/4) very gravelly clay, brown (10YR 4/3) moist; strong very fine and fine angular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; many very fine tubular pores; continuous moderately thick clay films on faces of ped and lining pores; 50 percent pebbles; mildly alkaline (pH 7.4); gradual wavy boundary.

*Bt3—18 to 27 inches; light yellowish brown (10YR 6/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; strong very fine and fine angular blocky structure; hard, firm, sticky and plastic; common very fine roots; many very fine tubular pores; continuous moderately thick clay films on faces of ped and lining pores; 50 percent pebbles; mildly alkaline (pH 7.8); abrupt wavy boundary.

*R—27 inches; fractured chert.

**Typical Pedon Location**

*Soil name and map unit in which located:* Roca very gravelly loam, 30 to 50 percent slopes, in Roca-Linrose-Wiskan association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 15 miles southeast of Battle Mountain; about 1,000 feet south and 2,000 feet east of the northwest corner of sec. 24, T. 30 N., R. 46 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry late in June to early in November

*Average annual soil temperature:* 43 to 47 degrees F

*Depth to bedrock:* 20 to 40 inches

*A horizon:*

- Hue—10YR or 2.5Y
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Structure—granular or platy
Reaction—slightly acid or mildly alkaline

Bt horizon:
Hue—dominantly 10YR or 7.5YR, but 2.5Y common in the lower part in some pedons
Value—5 to 7 dry, 3 to 7 moist
Chroma—3 to 6
Texture—very gravelly clay or very gravelly clay loam
Content of clay—35 to 50 percent
Content of rock fragments—35 to 50 percent, mainly pebbles
Structure—moderate or strong, medium or fine, and angular blocky or subangular blocky
Reaction—neutral to moderately alkaline, commonly increasing in alkalinity with increasing depth
Other characteristics—contains lime and is violently effervescent in the lower part in some pedons

Rotinom Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Loess and alluvium that is derived from various kinds of rock and includes some volcanic ash
Positions on landscape: Stream terraces
Slope: 0 to 2 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 45 degrees F

Taxonomic class: Fine-silty, mixed (calcareous), mesic Durorthidic Torrifluvents

Typical Pedon
A1—0 to 2 inches; pale brown (10YR 6/3) silt loam, yellowish brown (10YR 5/4) moist; strong thin and medium platy structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; many very fine and fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.
A2—2 to 4 inches; pale brown (10YR 6/3) silt loam, yellowish brown (10YR 5/4) moist; strong thick platy structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; many very fine and fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.
A3—4 to 9 inches; pale brown (10YR 6/3) silt loam, yellowish brown (10YR 5/4) moist; strong thin platy structure; slightly hard, friable, sticky and plastic; few very fine and common fine roots; many very fine and fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.
Bk—9 to 13 inches; pale brown (10YR 6/3) silt loam, yellowish brown (10YR 5/4) moist; moderate medium platy structure; soft, very friable, slightly sticky and plastic; few very fine and common fine roots; common very fine and fine tubular pores; few fine and medium lime coatings on plates; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.
Bq—13 to 16 inches; white and pale brown (10YR 8/2 and 6/3) silt loam, light brownish gray and yellowish brown (10YR 6/2 and 5/4) moist; strong thin platy structure; soft, very friable, slightly sticky and plastic; few very fine and common fine roots; common very fine and fine tubular pores; banded lenses of lighter colored volcanic ash; 50 percent hard, firm and brittle, discontinuous, weak, silica cementation; common medium lime coatings on plates; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.
Bq—16 to 24 inches; pale brown (10YR 6/3) silt loam, yellowish brown (10YR 5/4) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and plastic; few very fine and common fine roots; few medium and common very fine and fine tubular pores; thin discontinuous lenses of ash; 60 percent hard, firm and brittle, discontinuous, weak, silica cementation; many medium lime coatings on plates; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
Akb1—24 to 32 inches; gray (10YR 5/1) silty clay loam, very dark gray (10YR 3/1) moist; strong fine angular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine roots; few medium and common very fine and fine tubular pores; continuous thin silica coatings on faces of peds; common fine and medium lime filaments; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
Akb2—32 to 40 inches; light gray (10YR 6/1) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; silica bridges between sand grains; common fine lime filaments; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
Ck1—40 to 49 inches; gray (5Y 6/1) sandy loam, olive gray (5Y 4/2) moist; common fine distinct yellowish brown (10YR 5/6) relict mottles, dark yellowish brown (10YR 3/6) moist; massive; slightly hard,
friable, slightly sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; few fine lime filaments; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

3Ck2—49 to 65 inches; gray (10YR 6/1) sandy loam, olive gray (5Y 4/2) moist; common medium distinct yellowish brown (10YR 5/6) relict mottles, dark yellowish brown (10YR 4/6) moist, and few fine prominent yellowish red (5YR 5/6) relict mottles, dark reddish brown (5YR 3/4) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine tubular pores; common fine manganese coatings and concretions; common fine lime filaments; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

4C—65 to 69 inches; gray (5Y 6/1) extremely gravely coarse sand, olive gray (5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; 65 percent pebbles; common fine lime filaments on pebbles; strongly effervescent; moderately alkaline (pH 8.4).

**Typical Pedon Location**

*Soil name and map unit in which located:* Rotinom silt loam, 0 to 2 percent slopes, in Rotinom-Wholan association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 22 miles southeast of Austin, in the Monitor Valley, 1.8 miles south and 0.4 mile west of an isolated windmill; in an unsectionalized area about 1.5 miles east and 2.8 miles north of the southwest corner of the assumed sec. 31, T. 17 N., R. 47 E.

**Range in Characteristics**

*Soil moisture content:* Moist in some part from November to early in May; dry late in May through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the buried A horizon:* 20 to 35 inches

*Other characteristics:* 20 to 60 percent discontinuous silica cementation at a depth of 10 to 20 inches; relict mottles at a depth of more than 40 inches in some pedons

*Reaction:* Moderately alkaline or strongly alkaline

*Control section:*

- Content of clay—18 to 27 percent
- Content of sand—less than 15 percent particles coarser than very fine sand
- Content of rock fragments—as much as 5 percent in some horizons

**A horizon:**

- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4

Effervescence—noneffervescent to strongly effervescent

**Bk and Bqk horizons:**

- Hue—10YR, 2.5Y, or 5Y
- Value—5 to 8 dry, 3 to 5 moist
- Chroma—1 to 4

Texture—dominantly silt loam, but strata of silty clay loam common in most pedons and very thin lenses of loam, very fine sandy loam, or sandy clay loam in some pedons

Effervescence (matrix)—slightly effervescent to violently effervescent

Other characteristics—lime filaments, threads, or soft masses present

**Rutab Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium derived from various kinds of rock

*Positions on landscape:* Fan skirts, stream terraces

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 45 degrees F

*Taxonomic class:* Loamy-skeletal, mixed, frigid Xerollic Camborthids

**Typical Pedon**

About 5 percent of the surface is covered with pebbles.

A1—0 to 3 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate medium platy structure; soft, friable, nonsticky and nonplastic; few very fine and fine roots; many very fine and few fine vesicular pores; neutral (pH 7.2); abrupt smooth boundary.

A2—3 to 5 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bw1—5 to 8 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak medium and moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores and few very fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

Bw2—8 to 16 inches; pale brown (10YR 6/3) loam, dark
brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine tubular and interstitial pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.

2Bw3—16 to 21 inches; pale brown (10YR 6/3) gravelly loam. dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine interstitial pores; 15 percent moderate or strong durinodes 10 to 30 millimeters in diameter; 20 percent pebbles; mildly alkaline (pH 7.8); gradual wavy boundary.

3C—21 to 60 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; common very fine and few fine roots; many fine interstitial pores; 50 percent pebbles and 10 percent cobbles; few thin slightly effervescent lime coatings on the underside of rock fragments; noneffervescent in matrix; mildly alkaline (pH 7.8).

Typical Pedon Location

Map unit in which located: Rutab loam, 0 to 2 percent slopes
Location in Nevada: Lander County, Nevada, South Part; survey area; about 24 miles east of Austin; about 1,000 feet south and 1,000 feet west of the northeast corner of sec. 20, T. 19 N., R. 47 E.

Range in Characteristics

Soil moisture content: Moist in winter and early in spring, dry in mid-June through October
Average annual soil temperature: 45 to 47 degrees F
Combined thickness of the A and Bw horizons: 13 to 23 inches

Control section:
Content of clay—5 to 18 percent
Content of rock fragments—35 to 60 percent

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Consistence—soft or slightly hard (dry)
Reaction—neutral or mildly alkaline

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—loam or gravelly loam

2Bw horizon:
Texture—very gravelly sandy loam or very gravelly loam

Content of rock fragments—35 to 50 percent, mainly pebbles
Structure—subangular blocky or massive
Content of durinodes: As much as 15 percent in some pedons

3C horizon:
Value—6 or 7 dry, 3 or 4 moist
Chroma—3 or 4
Texture—extremely gravelly loamy sand, extremely gravelly sandy loam, or very gravelly sandy loam
Content of rock fragments—35 to 70 percent, mainly pebbles
Other characteristics—5 to 10 percent durinodes that commonly are very hard, firm, and brittle present in some pedons

Settlementer Series

Depth class: Very deep
Drainage class: Poorly drained
Parent material: Alluvium derived from various kinds of rock
Position on landscape: Flood plains, inset fans
Slope: 0 to 4 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 45 degrees F
Taxonomic class: Fine-loamy, mixed, mesic Fluvaquentic Haplaquolls

Typical Pedon

A1—0 to 5 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; moderate very thin and thin platy structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; common fine vesicular pores; mildly alkaline (pH 7.7); clear smooth boundary.

A2—5 to 10 inches; grayish brown (10YR 5/2) sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; mildly alkaline (pH 7.8); clear smooth boundary.

A3—10 to 16 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; common medium faint mottles that are dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; common worm casts; moderately alkaline (pH 7.9); clear smooth boundary.
AC—16 to 24 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; common medium distinct mottles that are yellowish brown (10YR 5/4) and very dark brown (10YR 2/2) moist; weak medium angular blocky structure; slightly hard, friable, very sticky and plastic; common very fine and fine roots; common very fine tubular pores; common fine slightly effervescent lime filaments; non-effervescent in matrix; moderately alkaline (pH 8.0); clear smooth boundary.

C1—24 to 36 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; few fine distinct mottles that are dark brown (7.5YR 4/4) and gray (2.5Y 5/0) moist; massive; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; few fine slightly effervescent lime seams; non-effervescent in matrix; moderately alkaline (pH 8.0); gradual smooth boundary.

2C2—36 to 65 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; few fine distinct mottles that are dark brown (7.5YR 4/4) and gray (2.5Y 5/0) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; mildly alkaline (pH 7.8).

**Typical Pedon Location**

*Map unit in which located:* Settlemeyer fine sandy loam, drained, 0 to 4 percent slopes

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 32 miles southwest of Battle Mountain; about 900 feet east and 2,550 feet south of the northwest corner of sec. 7, T. 27 N., R. 42 E.

**Range in Characteristics**

*Soil moisture content:* Dry in midsummer to early in fall, moist late in fall to early in summer

*Depth to an apparent seasonal high water table:* Commonly 12 to 36 inches in winter and spring, but some areas have been drained

*Average annual soil temperature:* 47 to 52 degrees F

*Thickness of the mollic epipedon:* 12 to 24 inches

*Reaction:* Neutral to very strongly alkaline (higher reaction only in sodium-affected pedons)

*Other characteristics:* O horizon that consists of as much as 6 inches of mainly undecomposed plant material present at top

**Control section:**

*Texture:* stratified clay, silty clay, silty clay loam, clay loam, loam, silt loam, or very fine sandy loam

*Content of clay:* 25 to 35 percent when mixed

*Content of fine sand or coarser fragments:* 15 to 30 percent

**A and AC horizons:**

*Value:* 4 or 5 dry, 2 or 3 moist

*Chroma:* 1 to 3

*Structure:* weak to strong, fine or medium, and prismatic, angular blocky, subangular blocky, or granular; weak to strong, very thin to medium, and platy; or massive

*Consistence:* slightly hard or hard (dry)

*Effervescence:* non-effervescent or slightly effervescent in the upper part of the A horizon, but non-effervescent between depths of 10 and 20 inches

**C horizon:**

*Hue:* 10YR, 2.5Y, or 5Y

*Value:* 5 or 6 dry, 3 or 4 moist

*Chroma:* 1 to 3

*Structure:* weak, medium or fine, and angular blocky, or massive

*Consistence:* slightly hard or hard (dry)

*Other characteristics:* distinct or prominent iron mottles that have reddish, greenish, or yellowish hue and chroma of 1 to 4 are present; base color indicative of gleying present in matrix; few lim concretions 0.25 to 0.75 inch in diameter

**2C horizon:**

*Effervescence:* Noneffervescent or slightly effervescent

**Shagnasty Series**

*Depth class:* Deep or very deep

*Drainage class:* Well drained

*Parent material:* Residuum and colluvium derived from rhyolite, andesite, and quartzite

*Positions on landscape:* Side slopes of mountains

*Slope:* 15 to 50 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 44 degrees F

*Taxonomic class:* Fine, montmorillonitic, frigid Typic Argixerolls

**Typical Pedon**

*About 15 percent of the surface is covered with pebbles, 30 percent with cobbles, and 40 percent with stones.*

*O—1 inch to 0; partially decomposed plant litter.*

*A1—0 to 3 inches; grayish brown (10YR 5/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine vesicular pores; 10 percent pebbles and 30 percent cobbles.*
and stones; neutral (pH 7.2); abrupt smooth boundary.

A2—3 to 10 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; 10 percent pebbles and 10 percent cobbles; neutral (pH 7.2); clear smooth boundary.

Bt1—10 to 15 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; strong medium angular blocky structure; hard, friable, very sticky and plastic; few fine and medium roots; few very fine tubular pores; many thin and few moderately thick clay films on faces of pebbles; 15 percent pebbles and 5 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt2—15 to 27 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, friable, very sticky and very plastic; few fine, medium, and coarse roots; few very fine tubular pores; common moderately thick clay films lining pores and on faces of pebbles; 10 percent pebbles; neutral (pH 7.2); clear wavy boundary.

Bt3—27 to 36 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure; hard, friable, very sticky and very plastic; few medium and coarse roots; few very fine tubular pores; many thick pressure faces; 10 percent pebbles; neutral (pH 7.2); clear wavy boundary.

Bt4—36 to 44 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few medium and coarse roots; few fine tubular pores; common moderately thick clay films lining pores and on faces of pebbles; 25 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.4); gradual wavy boundary.

Bt5—44 to 57 inches; light yellowish brown (10YR 6/4) cobbly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few medium roots; common moderately thick clay films lining pores and on faces of pebbles; 10 percent pebbles and 20 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

Cr—57 inches; weathered rhyolite.

**Typical Pedon Location**

**Soil name and map unit in which located:** Shagnasty very cobbly loam, 30 to 50 percent slopes, rubbly, in Shagnasty-Softscrabble association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 29 miles east of Austin; about 100 feet north and 800 feet east of the southwest corner of sec. 3, T. 20 N., R. 47 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter to early in summer, dry in mid-July through October

**Average annual soil temperature:** 44 to 46 degrees F

**Thickness of the mollic epipedon:** 10 to 16 inches (includes the upper part of the argillic horizon)

**Depth to the base of the Bt horizon:** 40 to more than 60 inches

**Depth to weathered bedrock:** 50 to 80 inches

**Reaction:** Slightly acid to mildly alkaline

**Other characteristics:** Lime below a depth of 40 inches in some pedons, lithologic discontinuity absent in some pedons

**Control section:**

- Content of clay—35 to 50 percent
- Content of rock fragments—5 to 15 percent when mixed

**A horizon:**

- Value—4 or 5 dry, 2 or 3 moist
- Chroma—2 or 3

**Bt horizon:**

- Hue—7.5YR or 10YR
- Value—4 to 6 dry, 3 to 5 moist
- Chroma—3 or 4 in the upper part, 4 to 6 in the lower part

**Structure:** dominantly prismatic or angular blocky, but massive in the lower part in some pedons

**Shipley Series**

**Depth class:** Very deep

**Drainage class:** Well drained

**Parent material:** Alluvium that is derived from various kinds of rock and includes some loess and volcanic ash

**Positions on landscape:** Inset fans

**Slope:** 0 to 2 percent

**Mean annual precipitation:** About 9 inches

**Mean annual temperature:** About 43 degrees F

**Taxonomic class:** Coarse-loamy, mixed (calcareous), frigid Xeric Torriorthents

**Typical Pedon**

About 5 percent of the surface is covered with pebbles.

A1—0 to 3 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate medium platy structure; hard, friable, slightly sticky and
slightly plastic; few very fine roots; many fine and medium vesicular pores; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

A2—3 to 5 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; slightly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

C1—5 to 11 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

C2—11 to 30 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Ck1—30 to 41 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; 10 percent pebbles; common medium lime filaments; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

2Ck2—41 to 60 inches; pale brown (10YR 6/3) extremely gravelly sand, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine and fine interstitial pores; 45 percent pebbles and 20 percent cobbles; common thin lime coatings on the underside of rock fragments; violently effervescent; moderately alkaline (pH 8.2).

Typical Pedon Location
Map unit in which located: Shipley silt loam, occasionally flooded. 0 to 2 percent slopes

Location in Nevada: Lander County, Nevada, South Part, survey area; about 23 miles southeast of Austin; about 1,800 feet south and 2,000 feet west of the northeast corner of sec. 3, T. 16 N., R. 47 E.

Range in Characteristics
Soil moisture content: Moist in winter and spring, dry in June through October
Average annual soil temperature: 45 to 47 degrees F

Reaction: Moderately alkaline to very strongly alkaline
Other characteristics: Thin strata of sand or gravel at a depth of more than 40 inches in some pedons; gravelly in the lower part in some pedons

Control section:
Content of clay—8 to 18 percent
Content of rock fragments—dominantly nongravelly, but as much as 35 percent gravel in individual strata

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Structure—strong or moderate, very thin to medium, and platy, or massive
Consistence—soft to hard (dry), very friable or friable (moist)

C horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 or 3
Texture—dominantly silt loam, fine sandy loam, or very fine sandy loam, but thin strata of loam or sandy loam in some pedons
Structure—weak and platy or subangular blocky, or massive
Consistence—soft or slightly hard (dry)
Other characteristics—as much as 20 percent slightly hard or hard, brittle durinodes 0.5 to 1.0 inch in diameter at a depth of more than 15 inches in some pedons; few fine or medium lime segregations at a depth of more than 24 inches

Silverado Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Alluvium that is derived from various kinds of rock and includes some volcanic ash
Positions on landscape: Inset fans
Slope: 0 to 8 percent
Mean annual precipitation: About 9 inches
Mean annual temperature: About 44 degrees F

Taxonomic class: Coarse-loamy, mixed, frigid Durixerollic Camborthids

Typical Pedon
A1—0 to 4 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine interstitial pores; 5 percent pebbles; slightly acid (pH 6.2); abrupt smooth boundary.

A2—6 to 11 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak fine and very fine
subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine and very fine roots; common fine and very fine interstitial pores: 5 percent pebbles; slightly acid (pH 6.2); clear wavy boundary.

Bw—6 to 14 inches; brownish gray (10YR 6/2) sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and very fine roots; common fine and very fine interstitial pores; 5 percent pebbles; slightly acid (pH 6.2); clear wavy boundary.

Bq—14 to 26 inches; very pale brown (10YR 7/3) gravelly sandy loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; few fine and very fine roots; common fine and very fine interstitial pores; continuously weakly cemented with common very thin silica bridges and few very thin discontinuous silica laminae; 20 percent pebbles; neutral (pH 7.0); gradual wavy boundary.

Bqk1—26 to 35 inches; white (10YR 8/1) gravelly sandy loam, very pale brown (10YR 7/3) moist; massive; very hard, very firm, nonsticky and nonplastic; few fine roots; common fine and very fine interstitial pores; continuously weakly cemented with common thin discontinuous silica and lime laminae; 20 percent pebbles; violently effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bqk2—35 to 60 inches; light gray (10YR 7/2) very gravelly coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; many fine and very fine interstitial pores; few discontinuous thin strongly cemented and common weakly cemented silica and lime laminae; 50 percent pebbles; violently effervescent; strongly alkaline (pH 9.0).

Typical Pedon Location

Map unit in which located: Silverado sandy loam, 0 to 2 percent slopes
Location in Nevada: Eureka County Area, Nevada, survey area; about 20 miles west of Eureka; about 300 feet west and 1,100 feet south of the northeast corner of sec. 10, T. 19 N., R. 50 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in June through October
Average annual soil temperature: 45 to 47 degrees F
Depth to the Bq horizon: 10 to 25 inches
Depth to the 2Bqk horizon: 30 to 40 inches
Control section:
Content of clay—5 to 15 percent

Content of rock fragments—10 to 30 percent pebbles when mixed

A horizon:
Value—5 or 6 dry and 3 or 4 moist (value of more than 5.5 dry and 3.5 moist occurs when the upper 7 inches is mixed)
Chroma—2 or 3
Reaction—slightly acid to mildly alkaline
Structure—granular, platy, or massive

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Content of rock fragments—0 to 15 percent
Reaction—slightly acid to mildly alkaline

Bq and Bqk horizons:
Value—6 to 8 dry, 4 to 7 moist
Chroma—1 to 3
Texture—sandy loam or gravelly sandy loam
Reaction—neutral to moderately alkaline
Other characteristics—continuous weak silica cementation and few or common very thin discontinuous horizontal and vertical silica laminae; strata that are not continuously cemented have durinodes or common pendants on rock fragments in the noncemented part

2Bk or 2Bqk horizon:
Value—6 to 8 dry, 4 to 7 moist
Chroma—1 to 3
Texture—very gravelly sand or very gravelly coarse sand
Reaction—moderately alkaline or strongly alkaline
Other characteristics—discontinuous, thin, weakly or strongly silica-cemented laminae in the 2Bqk horizon in some pedons

Simpark Series

Depth class: Shallow to duripan
Drainage class: Well drained
Parent material: Residuum and colluvium that are derived from andesite, rhyolite, and quartzite and include some volcanic ash
Positions on landscape: Side slopes of low hills and mountains
Slope: 2 to 50 percent
Mean annual precipitation: About 10 inches
Mean annual temperature: About 44 degrees F
Taxonomic class: Loamy-skeletal, mixed, frigid, shallow Xerolic Durargids

Typical Pedon
About 20 percent of the surface is covered with pebbles and 40 percent with cobbles.
A—0 to 3 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 3/3) moist; moderately medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine, fine, and medium vesicular pores; 10 percent pebbles and 25 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary.

BA—3 to 13 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine tubular pores; 15 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary.

Bt—13 to 18 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, sticky and plastic; few fine and medium roots; few fine tubular pores; common thin and few moderately thick clay films coating faces of ped and sand grains; 20 percent pebbles and 15 percent cobbles; thin silica coatings on the underside of rock fragments; moderately alkaline (pH 8.2); clear wavy boundary.

Bqkm—18 to 22 inches; very pale brown (10YR 7/3), indurated duripan that has a 0.5-inch-thick continuous laminar cap, brown (10YR 5/3) moist; massive; extremely hard, extremely firm; violently effervescent; clear wavy boundary.

2R—22 inches; andesite.

**Typical Pedon Location**

**Soil name and map unit in which located:** Simparks very cobbly loam, 15 to 30 percent slopes, in Akerue-Simpark-Punchbowl association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 20 miles east of Austin; in an unsectioned area about 5.4 miles south and 2,200 feet east of the northwest corner of the assumed sec. 6, T. 18 N., R. 47 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and spring, dry in mid-June to mid-October

**Average annual soil temperature:** 44 to 46 degrees F

**Depth to the duripan:** 14 to 20 inches

**Depth to lithic contact:** 20 to 30 inches

**Other characteristics:** Thin Bk or Btq horizon above the duripan in some pedons

**Control section:**

Content of clay—18 to 27 percent
Content of rock fragments—35 to 60 percent, mainly cobbles or pebbles

**A horizon:**

Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Reaction—neutral or mildly alkaline

**Bt horizon:**

Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—2 to 4
Reaction—mildly alkaline or moderately alkaline

**Skullwak Series**

**Depth class:** Very deep

**Drainage class:** Poorly drained

**Parent material:** Fine textured lacustrine sediment derived from various kinds of rock

**Positions on landscape:** Lake plains

**Slope:** 0 to 2 percent

**Mean annual precipitation:** About 7 inches

**Mean annual temperature:** About 47 degrees F

**Taxonomic class:** Fine, montmorillonitic (calcareous), mesic Aeric Halauquepts

**Typical Pedon**

A—0 to 2 inches; light gray (10YR 7/2) silt loam, pale brown (10YR 6/3) moist; moderate medium platy structure; hard, friable, sticky and plastic; few very fine roots; common very fine vesicular pores; strongly effervescent; very strongly alkaline (pH 9.4); abrupt smooth boundary.

C—2 to 10 inches; light gray (10YR 7/2) silty clay loam, yellowish brown (10YR 5/4) moist; moderate fine angular blocky structure; hard, friable, very sticky and very plastic; common very fine and fine roots; common very fine tubular and interstitial pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary.

2Cqk—10 to 17 inches; light gray (10YR 7/2) silty clay loam, yellowish brown (10YR 5/4) moist; many medium distinct mottles that are light brownish gray (2.5Y 6/2) and light gray (2.5Y 7/2) moist; moderate fine angular blocky structure; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine interstitial pores; 15 percent strongly cemented durinodes 15 to 25 millimeters in diameter; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

3Cqkg1—17 to 30 inches; white (5Y 8/2) silty clay, light olive gray (5Y 6/2) moist; many medium distinct mottles that are light gray (5Y 7/2) and yellowish brown (10YR 5/4) moist; massive; very hard, very firm, very sticky and very plastic; common very fine
and fine roots; few very fine tubular pores; 75 percent strongly cemented durinodes and discontinuous masses; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

3Cqg2—30 to 37 inches; light gray (5Y 7/2) silty clay loam. olive gray (5Y 5/2) moist; common fine distinct mottles that are light gray (5Y 7/2) and yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; 75 percent strongly cemented durinodes and discontinuous masses; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

3C1—37 to 48 inches; light gray (5Y 7/2) silty clay, light olive gray (5Y 6/2) moist; common fine distinct mottles that are olive (5Y 5/6) moist; moderate fine angular blocky structure; slightly hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

3C2—46 to 60 inches; light gray (5Y 7/2) silty clay loam, light olive gray (5Y 6/2) moist; few fine distinct mottles that are olive (5Y 5/6) moist; massive; hard, firm, very sticky and very plastic; strongly effervescent; moderately alkaline (pH 8.2).

**Typical Pedon Location**

*Soil name and map unit in which located:* Skullwak silt loam in Skullwak-Umberland-Wendane association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 41 miles northeast of Austin, in the Carico Lake Valley; in an unsectioned area about 1,600 feet south and 1,600 feet west of the southwest corner of the assumed sec. 28, T. 24 N., R. 47 E.

**Range in Characteristics**

*Soil moisture content:* Saturated year-round at a depth of 18 to 36 inches

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the Cqk horizon:* 8 to 14 inches

*Reaction:* Moderately alkaline to very strongly alkaline, commonly decreasing in alkalinity with increasing depth

*Exchangeable sodium percentage:* 25 to 40 above the Cqk horizon, 15 to 30 in and below the Cqk horizon

*Other characteristics:* Strongly affected by salt above the Cqk horizon, moderately affected in and below the Cqk horizon

**Control section:**

Texture—stratified silty clay loam or silty clay
Content of clay—35 to 45 percent when mixed

*A horizon:*

Value—7 or 8 dry, 4 to 6 moist
Chroma—2 or 3

*C and Cqk horizons:*

Hue—10YR in the upper part, 5Y or 2.5Y in the lower part
Chroma—3 or 4 in the upper part, 1 or 2 in the lower part

**Sodhouse Series**

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Alluvium that is derived from various kinds of rock and includes some loess and volcanic ash

*Positions on landscape:* Fan piedmont remnants

*Slope:* 2 to 4 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 48 degrees F

*Taxonomic class:* Loamy, mixed, mesic, shallow Typic Durothids

**Typical Pedon**

A—0 to 3 inches; pale brown (10YR 6/3) stony very fine sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; many very fine tubular pores; 2 percent stones; moderately alkaline (pH 8.0); clear smooth boundary.

Bw—3 to 10 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; many very fine tubular pores; 2 percent stones; moderately alkaline (pH 8.0); clear smooth boundary.

Bqk—10 to 17 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; 10 percent durinodes 3 to 5 millimeters in diameter; common fine round lime concretions; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.

2Bqkm—17 to 29 inches; white (10YR 8/2), indurated duripan, pale brown (10YR 6/3) moist; massive; abrupt smooth boundary.

2Cqk1—29 to 47 inches; very pale brown (10YR 7/3) very gravelly sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; 25 percent pebbles and 10 percent cobbles; 15 percent durinodes 15 to
30 millimeters in diameter; violently effervescent; strongly alkaline (pH 9.0); clear smooth boundary. 3Cqk2—47 to 60 inches; white (10YR 8/2) very gravelly loamy sand, pale brown (10YR 6/3) moist; massive; very hard, very firm, nonsticking and nonplastic; few very fine roots; about 30 percent pebbles, 5 percent cobbles, and 10 percent stones; continuously weakly silica-cemented; violently effervescent; strongly alkaline (pH 9.0).

**Typical Pedon Location**

*Soil name and map unit in which located:* Sodhouse stony very fine sandy loam in Orovida-Sodhouse association  
*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 20 miles north of Battle Mountain; about 1,600 feet north and 1,700 feet west of the southeast corner of sec. 8, T. 35 N., R. 45 E.

**Range in Characteristics**

*Soil moisture content:* Moist for short periods in winter and spring, dry in June through November  
*Average annual soil temperature:* 47 to 53 degrees F  
*Depth to the indurated duripan:* 14 to 20 inches  
*Thickness of the duripan:* 10 to 24 inches  
*Depth to the Ck horizon:* 25 to 44 inches  
*Content of clay in the control section:* 8 to 15 percent  
*Reaction:* Moderately alkaline or strongly alkaline, usually increasing in alkalinity with increasing depth  
*Other characteristics:* Durinodes and lime accumulations common in strata immediately above the duripan in some pedons  
*A horizon:*  
  Hue—10YR or 2.5Y  
  Value—6 or 7 dry, 4 or 5 moist  
  Chroma—2 or 3  
  Other characteristics—commonly non-effervescent, but slightly effervescent in some pedons as a result of lime recharge from dust  
*Bw horizon:*  
  Hue—10YR or 2.5Y  
  Value—6 or 7 dry, 4 or 5 moist  
  Chroma—3 or 4  
  Texture—very fine sandy loam, fine sandy loam, loam, or gravelly loam  
  Content of rock fragments—5 to 35 percent, mainly pebbles  
*Bqkm horizon:*  
  Hue—10YR or 2.5Y  
  Value—6 to 8 dry, 4 to 6 moist  
  Chroma—2 to 4  
  Structure—platy or massive

*2Ck horizon:*  
  Texture—extremely gravelly sandy loam or very gravelly loamy sand

**Softscrabble Series**

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Parent material:* Residuum and colluvium derived from volcanic rock and some chert, quartzite, and shale  
*Positions on landscape:* Side slopes of mountains  
*Slope:* 4 to 50 percent  
*Mean annual precipitation:* About 16 inches  
*Mean annual temperature:* About 44 degrees F  
*Taxonomic class:* Loamy-skeletal, mixed, frigid Pachic Argixerolls

**Typical Pedon**

About 30 percent of the surface is covered with pebbles and 25 percent with cobbles and stones. A1—0 to 3 inches; dark brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure; slightly hard, friable, nonsticking and nonplastic; many very fine and common fine roots; many very fine vesicular pores; 25 percent pebbles and 30 percent cobbles and stones; neutral (pH 7.0); abrupt smooth boundary. A2—3 to 9 inches; dark brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine interstitial pores; 15 percent pebbles and 5 percent cobbles; neutral (pH 7.0); clear smooth boundary. Bt1—9 to 16 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; common thin clay films on faces of peds; 25 percent pebbles and 5 percent cobbles; neutral (pH 7.2); clear wavy boundary. Bt2—16 to 22 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate coarse angular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common fine tubular pores; common thin and few moderately thick clay films on faces of peds; 10 percent pebbles, 35
percent cobbles, and 10 percent stones; neutral (pH 6.8); clear wavy boundary.

Bt3—22 to 30 inches; light yellowish brown (10YR 6/4) very cobbly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; common very fine and few fine roots; common fine tubular pores; many thin and few moderately thick clay films in pores and on faces of peds; 20 percent pebbles, 15 percent cobbles, and 5 percent stones; neutral (pH 6.8); gradual wavy boundary.

2Bt4—30 to 37 inches; brown (7.5YR 5/4) very gravelly clay loam, dark brown (7.5YR 3/4) moist; strong medium angular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; common moderately thick clay films on faces of peds; 35 percent pebbles; neutral (pH 6.8); clear wavy boundary.

2Bt5—37 to 60 inches; light brown (7.5YR 6/4) very gravelly clay loam, dark brown (7.5YR 4/4) moist; weak angular blocky structure; hard, friable, sticky and plastic; very few very fine roots; very few fine tubular pores; common moderately thick clay films on peds; 55 percent pebbles; neutral (pH 7.0).

### Typical Pedon Location

**Soil name and map unit in which located:** Softscrabble very cobbly loam, 15 to 50 percent slopes, in Zoesta-Robson-Softscrabble association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 15 miles east of Austin; about 1,000 feet west and 500 feet north of the southeast corner of sec. 1, T. 19 N., R. 46 E.

### Range in Characteristics

**Soil moisture content:** Moist in winter and spring, dry in mid-July to early in October

**Average annual soil temperature:** 44 to 47 degrees F

**Thickness of the mollic epipedon:** 20 to 38 inches

**Depth to the base of the Bt horizon:** 60 to 80 inches

**Reaction:** Slightly acid or neutral

**Control section:**
- Content of clay—27 to 35 percent
- Content of rock fragments (when mixed)—35 to 70 percent pebbles and cobbles and a few stones

**A horizon:**
- Hue—10YR or 7.5YR
- Value—3 to 5 dry, 2 or 3 moist
- Chroma—2 or 3
- Structure—platy, granular, or subangular blocky

**Bt horizon:**
- Hue—10YR or 7.5YR
- Value—4 to 6 dry, 3 or 4 moist

Chroma—2 to 4 (chroma of 4 in the lower part only)
Texture—loam or clay loam that averages 35 to 70 percent rock fragments, but individual strata are as little as 5 percent rock fragments

### Sonoma Series

**Depth class:** Very deep

**Drainage class:** Poorly drained

**Parent material:** Silty alluvium derived from various kinds of rock with a component of volcanic ash

**Positions on landscape:** Flood plains

**Slope:** 0 to 2 percent

**Mean annual precipitation:** About 7 inches

**Mean annual temperature:** About 50 degrees F

**Taxonomic class:** Fine-silty, mixed (calcareous), mesic Aeric Fluvaquents

#### Typical Pedon

A1—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin and medium platy structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots and few medium roots; few very fine vesicular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

A2—3 to 12 inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate fine subangular blocky; slightly hard, very friable, sticky and plastic; few very fine roots and common fine and medium roots; common fine interstitial pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

C1—12 to 19 inches; light gray (10YR 7/2) silty clay loam, dark grayish brown (10YR 4/2) moist; many fine distinct mottles that are dark brown (7.5YR 4/4) moist and few medium distinct mottles that are very dark brown (10YR 2/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, very sticky and plastic; common fine and medium roots and few very fine and coarse roots; common fine interstitial pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

C2—19 to 29 inches; light gray (10YR 7/2) silty clay loam, dark grayish brown (10YR 4/2) moist; common fine distinct mottles that are dark brown (7.5YR 4/4) moist and few medium faint mottles that are brown (7.5YR 5/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, very sticky and plastic; common fine and medium roots; common fine interstitial pores;
strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

**C3**—29 to 38 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; common fine distinct mottles that are dark brown (7.5YR 4/4) moist and few fine distinct mottles that are very dark brown (10YR 2/2) moist; moderate fine subangular blocky structure; hard, friable, very sticky and very plastic; few fine and medium roots; common very fine interstitial pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

**C4**—38 to 53 inches; light gray (10YR 7/2) silty clay loam, dark grayish brown (10YR 4/2) moist; many fine distinct mottles that are dark yellowish brown (10YR 4/6) moist; moderate thin and medium platy structure; hard, firm, very sticky and very plastic; few fine roots; common very fine vesicular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

**C5**—53 to 60 inches; light gray (10YR 7/2) silty clay loam, grayish brown (10YR 5/2) moist; many fine distinct mottles that are dark yellowish brown (10YR 4/4) moist; massive; hard, friable, very sticky and very plastic; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8).

**Typical Pedon Location**

**Soil name and map unit in which located:** Sonoma silty clay loam, frequently flooded, in Sonoma-Paranat association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 17 miles north of Austin; about 1,600 feet south and 100 feet east of the northeast corner of sec. 1, T. 21 N., R. 42 E.

**Range in Characteristics**

**Soil moisture content (undrained areas):** Saturated in spring and early in summer; water table at a depth of more than 40 inches the year

**Average annual soil temperature:** 49 to 53 degrees F

**Depth to the buried A horizon (when present):** 30 to 55 inches

**Calcium carbonate equivalent:** 3 to 12 percent throughout the profile

**Effervescence:** Strongly effervescent or violently effervescent

**Control section:**
- Texture—dominantly stratified silt loam to silty clay loam, but strata of clay or silty clay in some pedons
- Content of clay—25 to 35 percent

**A horizon:**
- Hue—2.5Y or 10YR

**Value**—3 to 5 moist

**Reaction**—moderately alkaline to very strongly alkaline (buried A horizon, when present, is moderately alkaline or strongly alkaline)

**C horizon:**
- Hue—10YR to 5Y
- Value—6 to 8 dry, 3 to 5 moist
- Chroma—dominantly 1 or 2, but 3 in some strata in some pedons
- Structure—platy, subangular blocky, or massive
- Reaction—moderately alkaline to very strongly alkaline
- Other characteristics—freshwater crustacean shells and lime concretions 0.25 to 0.5 inch in diameter in most pedons

**Spasprey Series**

**Depth class:** Moderately deep to duripan

**Drainage class:** Well drained

**Parent material:** Alluvium derived from various kinds of rock

**Positions on landscape:** Fan piedmont remnants

**Slope:** 0 to 8 percent

**Mean annual precipitation:** About 9 inches

**Mean annual temperature:** About 49 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic Haploxerolic Durargids

**Typical Pedon**

About 15 percent of the surface is covered with pebbles.

**A**—0 to 5 inches; light brownish gray (10YR 6/2) gravelly fine sandy loam, dark brown (10YR 3/3) moist; moderate medium and thick platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; 15 percent pebbles; neutral (pH 7.2); clear smooth boundary.

**Bt1**—5 to 9 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; few very fine tubular pores; common thin clay bridges between mineral grains; mildly alkaline (pH 7.4); clear smooth boundary.

**Bt2**—9 to 17 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine tubular pores; common thin and few moderately thick clay films on
faces of peds; mildly alkaline (pH 7.6); clear smooth boundary.

Bqk—17 to 26 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few fine and medium roots; few very fine tubular pores; 30 percent discontinuous weak silica cementation and 30 percent strongly cemented duripan; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bqkm—26 to 33 inches; very pale brown (10YR 7/4) strongly cemented duripan, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm; few very fine roots; very few very fine tubular pores; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Cqk—33 to 60 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; massive; hard, friable, nonsticky and nonplastic; few fine and medium roots; common very fine tubular pores; 30 percent discontinuous weak silica cementation and 20 percent discontinuous strongly silica-cemented masses; strongly effervescent; moderately alkaline (pH 8.4).

Typical Pedon Location

Soil name and map unit in which located: Spasprey gravelly fine sandy loam, 2 to 4 percent slopes, in Spasprey-Allor association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 43 miles southwest of Austin; about 2,100 feet north and 2,700 feet east of the northwest corner of sec. 28, T. 15 N., R. 38 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in some part in mid-October to mid-June

Average annual soil temperature: 47 to 53 degrees F

Depth to the base of the Bt horizon: 10 to 20 inches

Depth to the strongly cemented duripan: 20 to 30 inches

Control section:
- Texture—clay loam, loam, or sandy clay loam in the upper part; sandy loam or loam in the lower part
- Content of clay—20 to 35 percent when mixed
- Content of sand—more than 35 percent
- Content of rock fragments—less than 10 percent

A horizon:
- Hue—2.5Y or 10YR
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 to 4
- Consistence—nonsticky or slightly sticky and nonplastic or slightly plastic (wet)

Bt horizon:
- Hue—7.5YR, 10YR, or 2.5Y
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—3 or 4
- Texture—sandy clay loam, loam, or clay loam
- Content of rock fragments—less than 10 percent
- Structure—subangular blocky, angular blocky, or prismatic
- Consistence—slightly hard or hard (dry), sticky or very sticky and plastic or very plastic (wet)
- Reaction—neutral or mildly alkaline

Bqkm horizon:
- Hue—2.5Y, 10YR, or 7.5YR
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4

Spike Series

Depth class: Very deep

Drainage class: Well drained

Parent material: Gravelly alluvium derived from various kinds of rock

Positions on landscape: Side slopes of fan piedmont remnants and partial ballenas

Slope: 30 to 50 percent

Mean annual precipitation: About 8 inches

Mean annual temperature: About 49 degrees F

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Hapludolls

Typical Pedon

About 70 percent of the surface is covered with pebbles and 5 percent with cobbles.

A1—0 to 1 inch; very pale brown (10YR 7/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many fine vesicular pores; 35 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary.

A2—1 to 2 inches; pale brown (10YR 6/3) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak thin platy structure; slightly hard, friable, slightly sticky and plastic; few very fine roots; many fine vesicular and tubular pores; 25 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary.

Btn—2 to 6 inches; yellowish brown (10YR 5/6) very gravelly clay, dark yellowish brown (10YR 4/6) moist; strong fine angular blocky structure; very hard, firm, very sticky and very plastic; common very fine and fine roots; common very fine and fine...
tubular pores; many moderately thick clay films on faces of pedds and lining pores; 45 percent pebbles; moderately alkaline (pH 8.4); clear wavy boundary.

Btk1—6 to 14 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; very hard, friable, very sticky and plastic; few fine roots; common very fine and fine tubular and interstitial pores; common thin clay films on faces of pedds and lining pores; 45 percent pebbles and 10 percent cobbles; common medium soft lime masses and common thin lime coatings on the underside of rock fragments; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

Btk2—14 to 18 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy clay loam, dark yellowish brown (10YR 4/6) moist; massive; very hard, firm, sticky and plastic; few very fine roots; common very fine and fine tubular pores; common thin clay films bridging mineral grains; 60 percent pebbles and 5 percent cobbles; common thin lime coatings on the underside of rock fragments; strongly effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

Btk3—18 to 30 inches; very pale brown (10YR 7/4) extremely gravelly sandy clay loam, brownish yellow (10YR 6/6) moist; massive; hard, friable, sticky and plastic; very few fine roots; common very fine and fine interstitial pores; common thin clay films bridging mineral grains; 55 percent pebbles and 10 percent cobbles; common medium soft lime masses and common thin lime coatings on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Btky1—30 to 44 inches; very pale brown (10YR 7/4) extremely gravelly clay loam, brownish yellow (10YR 6/6) moist; massive; hard, friable, sticky and plastic; very few fine roots; common very fine and fine interstitial pores; common thin clay films bridging mineral grains; 55 percent pebbles and 10 percent cobbles; common medium soft lime masses and common thin lime coatings on the underside of rock fragments; common medium filaments of gypsum; violently effervescent; moderately alkaline (pH 8.2); gradual wavy boundary.

Btky2—44 to 60 inches; very pale brown (10YR 7/3) extremely gravelly sandy clay loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, sticky and plastic; few fine tubular pores; common thin clay films bridging mineral grains; 50 percent pebbles and 10 percent cobbles; common medium soft lime masses and common thin lime coatings on the underside of coarse fragments; common medium filaments of gypsum; violently effervescent; strongly alkaline (pH 8.6).

**Typical Pedon Location**

*Soil name and map unit in which located:* Spike very gravelly sandy loam, 30 to 50 percent slopes, in Pula-Spike association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 22 miles north of Austin; about 600 feet south and 2,300 feet east of the northwest corner of sec. 24, T. 23 N., R. 43 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter to early in spring, dry in mid-May through October

*Average annual soil temperature:* 47 to 53 degrees F

*Depth to lime:* 5 to 12 inches

*Depth to secondary gypsum:* 12 to 35 inches

*Depth to the base of the Bt horizon:* 40 to more than 60 inches

*Reaction:* Moderately alkaline or strongly alkaline

**Control section:**

- Content of clay—27 to 35 percent
- Content of rock fragments—35 to 60 percent

**A horizon:**

- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4

**B horizon:**

- Value—5 to 7 dry, 4 to 6 moist
- Chroma—3, 4, or 6
- Structure—commonly angular blocky or subangular blocky, but massive in the lower part in some pedons
- Exchangeable sodium percentage—15 to 35

**Bttn horizon:**

- Texture—very gravelly clay, very gravelly clay loam, or very gravelly sandy clay
- Content of clay—35 to 45 percent
- Content of rock fragments—35 to 60 percent, mainly pebbles

**Bttnk and Btky horizons:**

- Texture—dominantly extremely gravelly clay loam, extremely gravelly sandy clay loam, extremely gravelly loam, or very gravelly loam, but strata of extremely gravelly sandy loam or extremely gravelly loam at a depth of more than 40 inches in some pedons
- Content of clay—20 to 30 percent when mixed
- Content of rock fragments—50 to 75 percent, mainly pebbles
Stampede Series

Depth class: Moderately deep to duripan
Drainage class: Well drained
Parent material: Alluvial derived from tuff and various other kinds of rock
Positions on landscape: Valley fans of mountains
Slope: 4 to 8 percent
Mean annual precipitation: About 12 inches
Mean annual temperature: About 43 degrees F
Taxonomic class: Fine, montmorillonitic, frigid Aridic Durixerolls

Typical Pedon

About 40 percent of the surface is covered with pebbles.
A1—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, friable, nonsticky and nonplastic; common fine roots; many fine vesicular pores; 20 percent pebbles; neutral (pH 6.6); abrupt smooth boundary.
A2—4 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common fine roots; many fine interstitial pores; neutral (pH 6.8); clear wavy boundary.
A3—10 to 18 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; common fine roots; common very fine tubular pores; neutral (pH 6.8); clear wavy boundary.
Bt—18 to 31 inches; yellowish brown (10YR 5/4) clay, yellowish brown (10YR 5/6) moist; strong medium prismatic structure; very hard, very firm, very sticky and very plastic; few fine roots; few very fine tubular pores; continuous thin clay films; neutral (pH 7.2); abrupt smooth boundary.
Bqkm—31 to 60 inches; indurated duripan.

Typical Pedon Location

Soil name and map unit in which located: Stampede gravelly loam, 4 to 8 percent slopes, in Stampede-Handy-Caniwie association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 15 miles northwest of Austin; about 1,400 feet north and 2,700 feet east of the southwest corner of sec. 1, T. 20 N., R. 40 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry in July through October
Average annual soil temperature: 44 to 47 degrees F

Thickness of the mollic epipedon: 7 to 13 inches
Depth to the duripan: 20 to 36 inches

Control section:
Content of clay—40 to 55 percent
Content of rock fragments—0 to 10 percent pebbles

A horizon:
Value—dominantly 4 or 5 dry and 2 or 3 moist, but 6 dry and 4 moist common in the lower part
Chroma—2 or 3
Structure—weak or moderate, thin to thick, and platy, or massive in the upper 3 to 5 inches; moderate or strong, fine or medium, and granular or subangular blocky below this depth
Reaction—slightly acid or neutral

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—2 to 4
Content of rock fragments—as much as 15 percent
Structure—moderate or strong, medium or coarse, and prismatic, or fine to coarse and subangular blocky or angular blocky
Reaction—neutral or mildly alkaline

Bqkm horizon:
Reaction—mildly alkaline or moderately alkaline
Other characteristics—noneffervescent to strongly effervescent in the matrix, few to many lime coatings at top or in fractures

Stingdorn Series

Depth class: Very shallow or shallow to duripan
Drainage class: Well drained
Parent material: Residuum derived from rhyolite, andesite, and tuff
Positions on landscape: Crests and side slopes of foothills and hills
Slope: 2 to 50 percent
Mean annual temperature: About 49 degrees
Mean annual precipitation: About 6 inches
Taxonomic class: Loamy-skeletal, mixed, mesic, shallow Typic Durargids

Typical Pedon

About 5 percent of the surface is covered with pebbles and 40 percent with cobbles.
A—0 to 7 inches; light brownish gray (10YR 6/2) very cobbly loam, dark brown (10YR 4/3) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine vesicular pores; 5
percent; pebbles and 40 percent cobbles; moderately alkaline (pH 8.0); clear wavy boundary.

Bt horizon:
Hue—10YR or 2.5Y
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4
Content of clay—averages 27 to 35 percent, but is slightly less in some strata in some pedons
Content of rock fragments—35 to 50 percent, mainly pebbles
Consistence—slightly hard or hard (dry), very friable or friable (moist)
Reaction—mildly alkaline to strongly alkaline
Effervescence—slightly effervescent or strongly effervescent in some pedons, noneffervescent in the upper part in some pedons

Bqk horizon (when present):
Hue—10YR or 2.5Y
Value—6 to 8 dry, 6 or 7 moist
Chroma—2 or 3
Reaction—moderately alkaline or strongly alkaline

**Sumine Series**

**Depth class:** Moderately deep
**Drainage class:** Well drained
**Parent material:** Residuum and colluvium derived from dominantly quartzite, breccia, and sandstone
**Positions on landscape:** South-facing side slopes of mountains
**Slope:** 30 to 50 percent
**Mean annual precipitation:** About 12 inches
**Mean annual temperature:** About 44 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, frigid Aridic Argixerolls

**Typical Pedon**

About 15 percent of the surface is covered with pebbles and 15 percent with cobbles.

A1—0 to 5 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; weak medium platy structure parting to moderate fine granular; soft, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores and common very fine tubular pores; 0 percent pebbles and 10 percent cobbles; slightly effervescent; neutral (pH 7.2); gradual smooth boundary.

A2—5 to 10 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine interstitial pores and common very fine
tubular pores; 15 percent pebbles and 5 percent cobbles; neutral (pH 7.3); clear smooth boundary.

Bt1—10 to 13 inches; pale brown (10YR 6/3) gravely clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots and few medium roots; common very fine interstitial and tubular pores; few thin clay films on faces of ped; 30 percent pebbles; neutral (pH 7.3); clear wavy boundary.

Bt2—13 to 19 inches; pale brown (10YR 6/3) very gravely clay loam, dark brown (10YR 4/3) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; common moderately thick clay films lining pores and on faces of ped; 35 percent pebbles and 10 percent cobbles; mildly alkaline (pH 7.6); clear wavy boundary.

Bt3—19 to 24 inches; light yellowish brown (10YR 6/4) very cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; common moderately thick clay films on faces of ped; 25 percent pebbles and 20 percent cobbles; mildly alkaline (pH 7.8); abrupt wavy boundary.

Bt4—24 to 30 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; 25 percent pebbles and 40 percent cobbles; mildly alkaline (pH 7.8); abrupt wavy boundary.

2R—30 inches; quartzite.

Reaction: Neutral or mildly alkaline
Control section:
Content of clay—25 to 35 percent when mixed
Texture—dominantly clay loam, but some pedons have thin strata of loam or clay
Content of rock fragments—averages 35 to 60 percent

A horizon:
Chroma—2 or 3
Structure—weak or moderate, very thin to medium, and platy; or weak or moderate, very fine to medium, and granular or subangular blocky
Consistence—soft or slightly hard (dry), very friable or friable (moist)

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Structure—dominantly weak or moderate, very fine, fine, or medium, and angular blocky or subangular blocky, but the lower part is massive in some pedons

Sundown Series

Depth class: Very deep
Drainage class: Somewhat excessively drained
Parent material: Mixed alluvium and eolian deposits
Positions on landscape: Sand sheets
Slope: 2 to 4 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 53 degrees F

Taxonomic class: Mixed, mesic Typic Torripsamments

Typical Pedon

A—0 to 7 inches; pale brown (10YR 6/3) fine sand, brown (10YR 4/3) moist; moderate thin platy structure parting to moderate medium subangular blocky; soft, very friable, nonsticky and nonplastic; common fine and medium roots and few very fine roots; common fine and medium vesicular pores; strongly effervescence or violently effervescence; moderately alkaline (pH 8.4); clear smooth boundary.

C1—7 to 12 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many fine and medium roots and common very fine roots; many fine and medium tubular pores; 10 percent pebbles; violently effervescence; strongly alkaline (pH 8.8); clear smooth boundary.

Typical Pedon Location

Soil name and map unit in which located: Sumine cobbly loam, 30 to 50 percent slopes, in Walii-Sumine-Softscrabble association

Location in Nevada: Lander County, Nevada, North Part, survey area; about 28 miles south of Battle Mountain; about 50 feet west and 1,000 feet south of the northeast corner of sec. 32, T. 26 N., R. 44 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry early in July to mid-October
Average annual soil temperature: 42 to 47 degrees F
Thickness of the molic epipedon: 8 to 15 inches
Depth to bedrock: 20 to 40 inches
Combined thickness of the A and Bt horizons: 20 to 40 inches
C2—12 to 60 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 4/3) moist; massive; soft, very friable, sticky and nonplastic; common fine roots; common fine and medium tubular pores; violently effervescent; strongly alkaline (pH 8.8).

**Typical Pedon Location**

*Soil name and map unit in which located:* Sundown fine sand, 2 to 4 percent slopes, in Wardenot-Sundown association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 20 miles south of Austin; about 2,600 feet north and 2,400 feet west of the southeast corner of sec. 11, T. 16 N., R. 45 E.

**Range in Characteristics**

*Soil moisture content:* Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively between July and October as a result of convection storms

*Average annual soil temperature:* 55 to 59 degrees F

*Reaction:* Moderately alkaline to very strongly alkaline

*Other characteristics:* Calcareous throughout

**A horizon:**

*Value:* 6 or 7 dry, 4 or 5 moist

*Chroma:* 2 or 3 dry or moist

**C horizon:**

*Value:* 6 or 7 dry, 4 or 5 moist

*Chroma:* 2 or 3 dry or moist

*Texture:* predominantly loamy fine sand, but thin strata of sand, fine sand, or loamy sand in some pedons

*Content of rock fragments:* as much as 15 percent, dominantly pebbles

*Structure:* subangular blocky, massive, or single grain

*Other characteristics:* unconformable material, when present, is at a depth of 40 to 60 inches and is dominantly sandy clay loam

**Teguro Series**

*Depth class:* Shallow

*Drainage class:* Well drained

*Parent material:* Residuum derived from rhyolitic tuff, rhyolite, and basalt

*Positions on landscape:* Side slopes of foothills and mountains

*Slope:* 30 to 50 percent

*Mean annual precipitation:* About 14 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Loamy, mixed, frigid Lithic Argixerolls

**Typical Pedon**

About 55 percent of the surface is covered with pebbles.

*A—0 to 4 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine vesicular pores; 35 percent pebbles; neutral (pH 6.8); abrupt smooth boundary.

*Bt1—4 to 9 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many fine roots and few very fine and medium roots; common very fine and fine tubular and interstitial pores; common thin clay films on faces of peds and lining pores; 30 percent pebbles; neutral (pH 7.0); clear smooth boundary.

*Bt2—9 to 16 inches; paler yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium angular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; few very fine tubular pores; common moderately thick clay films on faces of peds and lining pores; 30 percent pebbles; neutral (pH 7.2); abrupt irregular boundary.

*R—16 inches; rhyolitic tuff.

**Typical Pedon Location**

*Soil name and map unit in which located:* Teguro very gravelly loam, 30 to 50 percent slopes, in Punchbowl-Teguro-Sumine association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 14 miles southwest of Battle Mountain; about 2,600 feet east and 1,500 feet south of the northwest corner of sec. 2, T. 31 N., R. 42 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in mid-July to early in October

*Average annual soil temperature:* 43 to 47 degrees F

*Thickness of the mollic epipedon:* 7 to 12 inches

*(includes the upper part of the Bt horizon)*

*Combined thickness of the A and Bt horizons and depth to bedrock:* 14 to 20 inches

*Control section:*

*Content of clay:* 25 to 35 percent

*Content of rock fragments:* 15 to 35 percent, mainly pebbles

*Reaction:* slightly acid or neutral
A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—gravelly loam or gravelly clay loam

**Tenabo Series**

*Depth class:* Very shallow or shallow to duripan

*Drainage class:* Well drained

*Parent material:* Thin mantle of loess that is high in content of volcanic ash over alluvium derived from various kinds of rock

*Positions on landscape:* Fan piedmont remnants

*Slope:* 0 to 8 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 47 degrees F

*Taxonomic class:* Loamy, mixed, mesic, shallow Typic Nadurargids

**Typical Pedon**

A1—0 to 7 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine random roots and few fine oblique roots; many very fine vesicular pores; 5 percent small pebbles; moderately alkaline (pH 8.4); abrupt wavy boundary.

A2—7 to 13 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; massive; hard, very friable, sticky and plastic; common very fine and fine random roots and very few medium and coarse oblique roots; common very fine vesicular and tubular pores and few fine tubular pores; 5 percent small pebbles; strongly effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.

Bt1—13 to 17 inches; pale brown (10YR 6/3) silty clay loam; brown (10YR 4/3) moist; weak medium prismatic structure parting to moderately very fine and fine angular blocky; slightly hard, very friable, sticky and plastic; common very fine random roots; common very fine interstitial and tubular pores; common thin clay films on faces of ped and lining pores; 10 percent small pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.

Bt2—17 to 20 inches; very pale brown (10YR 7/3) gravelly silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate fine angular blocky; slightly hard, very friable, sticky and plastic; few very fine random roots and very few fine horizontal roots; common very fine interstitial and tubular pores; many thin clay films on faces of ped and lining pores; 20 percent small pebbles; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

2Bqkm1—20 to 24 inches; light yellowish brown (10YR 6/4), indurated duripan, dark yellowish brown (10YR 4/4) moist; common fine distinct iron mottles that are reddish yellow (7.5YR 7/6) and strong brown (7.5YR 5/6) moist; massive; very hard, very firm; very few very fine roots in fractures; few very fine tubular pores; continuous, very pale brown (10YR 8/3 and 7/3, moist), silica laminae 1/16 to 1/8 inch thick; about 30 percent small rounded pebbles; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

2Bqkm2—24 to 39 inches; very pale brown (10YR 7/3), strongly silica-cemented duripan, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm; few very fine roots in fractures; many very fine interstitial pores; silica laminae 1 to 3 inches thick throughout the horizon; 70 percent rounded pebbles as much as 0.5 inch in diameter; strongly effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.

2C—39 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loamy sand, dark yellowish brown (10YR 4/1) moist; single grain; loose, nonsticky and nonplastic; few very fine random roots; many very fine interstitial pores; few discontinuous silica- and lime-cemented lenses; 75 percent rounded pebbles as much as 1.5 inches in diameter; slightly effervescent; moderately alkaline (pH 8.4).

**Typical Pedon Location**

*Soil name and map unit in which located:* Tenabo silt loam, 0 to 2 percent slopes, in Beoska-Tenabo silt loams, nearly level

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 50 miles southwest of Battle Mountain; about 1,320 feet west and 25 feet north of the southeast corner of sec. 27, T. 25 N., R. 42 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry late in May through November

*Average annual soil temperature:* 47 to 51 degrees F

*Depth to the duripan:* 9 to 20 inches
Reaction: Moderately alkaline or strongly alkaline in the A and Bt horizons, moderately alkaline to very strongly alkaline below these horizons

Effervescence: Ranges from noneffervescent in the upper layer to violently effervescent in the layer above the duripan in areas subject to lime recharge

Control section:
- Content of clay—27 to 35 percent
- Content of rock fragments—less than 20 percent when mixed

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—weak or moderate, very thin to thick, and platy, or massive

Bt and Btn horizons:
- Value—5 to 7 dry, 4 or 5 moist
- Chroma—3, 4, or 6
- Texture of the fine-earth fraction—dominantly clay loam, silty clay loam, or sandy clay loam, but thin strata of silt loam in some pedons
- Content of rock fragments—less than 20 percent, mainly pebbles, but some duripan fragments included in some pedons
- Structure—moderate, fine or medium, and prismatic, angular blocky, or subangular blocky
- Reaction—moderately alkaline or strongly alkaline, commonly increasing in alkalinity with increasing depth
- Exchangeable sodium percentage—15 to 30
- Other characteristics—the lower part violently effervescent in some pedons and contains segregated lime

Bkrm horizon:
- Value—6 to 8 dry, 4 to 7 moist
- Chroma—2 to 4
- Other characteristics—very hard or extremely hard, continuous laminae stratified with strongly cemented material

C horizon:
- Texture—gravely to extremely gravelly sand, loamy sand, or sandy loam
- Content of rock fragments—15 to 85 percent, mainly pebbles

Tessfive Series

Depth class: Shallow
Drainage class: Well drained
Parent material: Residuum that is derived from tuffaceous sediment and includes some loess

Positions on landscape: Rolling crests and side slopes of hills
Slope: 2 to 30 percent
Mean annual precipitation: About 8 inches
Mean annual temperature: About 48 degrees F

Taxonomic class: Loamy, mixed (calcareous), mesic
Lithic Xeric Torriorthenths

Typical Pedon

About 35 percent of the surface is covered with pebbles.

A1—0 to 3 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; soft, very friable, sticky and plastic; few very fine roots; common very fine vesicular pores; 20 percent pebbles; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

A2—3 to 6 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; soft, very friable, slightly sticky and plastic; common very fine roots; common very fine interstitial pores; 20 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary.

Bk1—6 to 10 inches; light brownish gray (10YR 6/2) gravelly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; few very fine tubular pores; few fine lime filaments or threads and lime coatings on the underside of rock fragments; 20 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk2—10 to 16 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; few very fine tubular pores; few fine and medium lime filaments or threads and lime coatings on the underside of rock fragments; 25 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary.

R—16 to 20 inches; hard, fractured, consolidated, tuffaceous sediment; lime coatings on rock fragments.

Typical Pedon Location

Soil name and map unit in which located: Tessfive gravelly loam, 8 to 30 percent slopes, in Tessfive-Puett-Grina association

Location in Nevada: Lander County, Nevada, North Part, survey area; about 23 miles north of Austin; in an unsectionalized area about 10,000 feet south and
4,250 feet west of the southwest corner of the assumed sec. 27, T. 24 N., R. 43 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and spring, dry late in June through October

**Average annual soil temperature:** 47 to 52 degrees F

**Depth to bedrock:** 10 to 20 inches

**Reaction:** Moderately alkaline or strongly alkaline

**Calcium carbonate equivalent:** Dominantly 5 to 15 percent, but the A1 horizon leached of carbonates in some pedons

**Other characteristics:** In some pedons the upper few inches of bedrock are highly weathered paralithic material

**Control section:**
- Content of clay—14 to 24 percent
- Texture—loam or sandy loam
- Content of rock fragments—20 to 35 percent, mainly pebbles

**A horizon:**
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3

**Bk horizon:**
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—2 to 6
- Structure—subangular blocky or massive
- Other characteristics—as much as 15 percent weakly cemented durinodes in the lower part in some pedons

**Tome Series**

**Depth class:** Shallow to duripan

**Drainage class:** Well drained

**Parent material:** Alluvium derived from shale, siltstone, limestone, and chert

**Positions on landscape:** Fan piedmont remnants

**Slope:** 2 to 8 percent

**Mean annual precipitation:** About 6 inches

**Mean annual temperature:** About 51 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic, shallow Typic Durargids

**Typical Pedon**

About 55 percent of the surface is covered with pebbles.

A—0 to 4 inches: light gray (10YR 7/2) gravelly fine sandy loam, grayish brown (10YR 5/2) moist; weak medium and thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, medium, and coarse vesicular pores and few very fine and fine tubular pores; 20 percent pebbles; slightly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary.

Bt1—4 to 8 inches: pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 4/3) moist; weak fine angular blocky structure; soft, very friable, very sticky and plastic; common very fine and fine roots; few very fine tubular pores; few thin lime and silica coatings on the underside of pebbles; few moderately thick clay films on faces of pebbles, in root channels, and lining tubular pores; 25 percent pebbles; few fine soft lime masses; slightly effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

Bt2—8 to 11 inches: dark grayish brown (10YR 4/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; weak very fine subangular blocky structure; slightly hard, very friable, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; 45 percent pebbles; few thin lime and silica coatings on the underside of pebbles; few moderately thick clay films on faces of pebbles, in root channels, and lining tubular pores; common medium soft lime masses; slightly effervescent; very strongly alkaline (pH 9.0); gradual wavy boundary.

Bk—11 to 15 inches: light gray (10YR 7/2) very gravelly sandy clay loam, pale brown (10YR 6/3) moist; weak very fine subangular blocky structure; slightly hard, firm, sticky and plastic; few very fine and fine roots; few very fine tubular pores; thick lime and silica coatings on the underside of pebbles; 50 percent pebbles; many coarse soft lime masses; strongly effervescent; very strongly alkaline (pH 9.4); gradual wavy boundary.

Bk—15 to 18 inches: white (10YR 8/2) gravelly sandy loam, very pale brown (10YR 7/3) moist; massive; hard, firm, slightly sticky and nonplastic; few very fine and fine roots; few very fine tubular pores; 30 percent discontinuously weakly cemented pebbles; thick lime and silica coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

Bqkm1—18 to 26 inches; white (2.5Y 8/2), indurated duripan that has a continuous laminar cap 0.5 millimeter thick, light brownish gray (2.5Y 6/2) moist; massive; extremely hard, extremely firm; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

Bqkm2—26 to 33 inches: light brownish gray (2.5Y 6/2), continuous, strongly cemented duripan, dark grayish brown (2.5Y 4/2) moist; massive; extremely hard, extremely firm; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

2Cqk—33 to 60 inches; stratified light gray (10YR 7/1)
extremely gravelly sand and discontinuous, strongly cemented duripan, gray (10YR 6/1) moist; massive; extremely hard, extremely firm, nonsticky and nonplastic: 70 percent pebbles; violently effervescent; strongly alkaline (pH 8.6).

Typical Pedon Location

Soil name and map unit in which located: Tomel gravelly fine sandy loam, 2 to 4 percent slopes, in Laxal-Tomel association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 22 miles south of Austin, in the Big Smoky Valley; about 300 feet north and 3,000 feet east of the southwest corner of sec. 5, T. 15 N., R. 44 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively between July and October as a result of convection storms
Average annual soil temperature: 53 to 59 degrees F
Depth to the duripan: 10 to 20 inches
Other characteristics: Thin Bqk horizon immediately above the duripan in some pedons

Control section (when mixed):
- Content of clay—20 to 30 percent
- Content of rock fragments—35 to 50 percent, mainly pebbles
- Texture—clay loam or sandy clay loam

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—massive or platy

BA horizon (when present):
- Value—7 or 8 dry, 4 or 5 moist
- Chroma—2 or 3

Bt1 horizon:
- Value—5 or 6 dry, 3 to 5 moist
- Chroma—3 or 4
- Structure—prismatic or angular blocky
- Content of rock fragments—10 to 35 percent

Bt2 horizon:
- Structure—massive or subangular blocky
- Content of rock fragments—40 to 65 percent

Bqk horizon:
- Value—6 or 7 dry, 4 to 6 moist
- Chroma—1 to 3
- Content of rock fragments—50 to 75 percent

Bqkm horizon:
- Value—6 to 8 dry; 4, 5, or 7 moist
- Chroma—2 to 4

Torrripsammentic Haploxerolls

Depth class: Very shallow to moderately deep
Drainage class: Well drained
Parent material: Residuum derived from granite
Positions on landscape: Side slopes of mountains
Slope: 30 to 50 percent
Mean annual precipitation: About 15 inches
Mean annual temperature: About 44 degrees F
Taxonomic class: Torripsammentic Haploxerolls

Representative Pedon

About 10 percent of the surface is covered with pebbles and 10 percent with cobbles.

O—1 inch to 0; undecomposed pine needles and litter.
A1—0 to 2 inches; brown (10YR 5/3) cobbly loamy coarse sand, very dark brown (10YR 2/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine interstitial pores; 5 percent pebbles and 10 percent cobbles; neutral (pH 6.8); abrupt smooth boundary.
A2—2 to 4 inches; brown (10YR 5/3) coarse sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial pores; 5 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary.
C—4 to 7 inches; pale brown (10YR 6/3) loamy coarse sand, dark brown (10YR 3/3) moist; single grain; loose, nonsticky and nonplastic; common fine and medium roots; common very fine and fine interstitial pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary.
Cr—7 to 21 inches; soft, weathered granite.

Typical Pedon Location

Soil name and map unit in which located:
Torrripsammentic Haploxerolls cobbly loamy coarse sand in Typic Argixerolls-Torrripsammentic Haploxerolls-Glean association
Location in Nevada: Lander County, Nevada, South Part, survey area; about 0.5 mile southwest of Austin; about 400 feet east and 500 feet north of the southwest corner of sec. 19, T. 19 N., R. 44 E.

Range in Characteristics

Soil moisture content: Moist in October through June, dry in summer and early in fall
Average annual soil temperature: 43 to 46 degrees F
Depth to paralithic contact: 5 to 30 inches
Reaction: Neutral or mildly alkaline, commonly increasing in alkalinity with increasing depth
Control section:
Texture—loamy sand or loamy coarse sand
Content of clay—5 to 12 percent
Content of rock fragments—0 to 10 percent pebbles and cobbles

A horizon:
Value—4 or 5 dry

C horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4

Torro Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Residueum and colluvium that is derived from chert and shale and includes some loess and volcanic ash
Positions on landscape: Side slopes of mountains
Slope: 15 to 75 percent
Mean annual precipitation: About 14 inches
Mean annual temperature: About 42 degrees F

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Argixerolls

Typical Pedon
About 65 percent of the surface is covered with pebbles and 15 percent with cobbles.
A1—0 to 2 inches; brown (10YR 5/3) extremely gravelly loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine vesicular pores; 45 percent pebbles and 15 percent cobbles; neutral (pH 7.0); abrupt smooth boundary.
A2—2 to 6 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores; 30 percent pebbles and 5 percent cobbles; neutral (pH 7.0); clear wavy boundary.
A3—6 to 10 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, medium, and coarse roots; common very fine tubular pores; 25 percent pebbles and 5 percent cobbles; neutral (pH 7.2); clear wavy boundary.
Bt1—10 to 18 inches; light yellowish brown (10YR 6/4) extremely gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, very friable, very sticky and plastic; common very fine and few medium roots; common very fine tubular pores; common moderately thick clay films on faces of pedds; 60 percent pebbles and 15 percent cobbles; neutral (pH 7.2); clear wavy boundary.
Bt2—18 to 34 inches; pale brown (10YR 6/3) extremely gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine and medium angular blocky structure; hard, friable, very sticky and plastic; few fine and medium roots; few fine tubular pores; common moderately thick clay films on faces of pedds; 60 percent pebbles and 5 percent cobbles; neutral (pH 7.3); clear wavy boundary.
C1—34 to 45 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few medium roots; common fine interstitial pores; 55 percent pebbles and 5 percent cobbles; neutral (pH 7.3); gradual wavy boundary.
C2—45 to 60 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few medium roots; common fine interstitial pores; 55 percent pebbles and 5 percent cobbles; neutral (pH 7.3).

Typical Pedon Location
Soil name and map unit in which located: Torro
extremely gravelly loam, 30 to 50 percent slopes, in Torro-Itca-Softscrub association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 38 miles southwest of Austin; in an unsectionalized area about 2,000 feet west and 1,000 feet south of the northeast corner of the assumed sec. 10, T. 16 N., R. 38 E.

Range in Characteristics
Soil moisture content: Dry in July to mid-October, moist in some part in mid-October through June
Average annual soil temperature: 43 to 46 degrees F
Thickness of the molic epipedon: 10 to 14 inches
Combined thickness of the A and Bt horizons: 24 to 40 inches

Control section:
Texture—extremely gravelly loam, clay loam, or sandy clay loam
Content of clay—20 to 30 percent
Content of rock fragments—60 to 75 percent, mainly angular, pebble-sized chert and shale fragments

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—weak or moderate, very fine to coarse, and subangular blocky; weak or moderate, very thin to thick, and platy; or weak or moderate, very fine or fine, and angular blocky

**Bt horizon:**
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Structure—weak or moderate, fine or medium, and angular or subangular blocky
Consistence—slightly hard or hard (dry), very friable or friable (moist), sticky or very sticky and slightly plastic or plastic (wet)
Other characteristics—few or common, thin or moderately thick clay films lining pores, bridging and coating sand grains, or coating faces of peds

**C horizon:**
Value—5 or 6 moist
Chroma—3 or 4
Texture—extremely gravelly sandy loam or loamy sand

**Trunk Series**

**Depth class:** Moderately deep
**Drainage class:** Well drained
**Parent material:** Residuum and colluvium derived from quartzite, chert, andesite, and rhyolite
**Positions on landscape:** Crests and side slopes of mountains and foothills
**Slope:** 30 to 50 percent
**Mean annual precipitation:** About 9 inches
**Mean annual temperature:** About 47 degrees F
**Taxonomic class:** Fine, montmorillonitic, mesic Xerolic Haplargids

**Typical Pedon**
About 15 percent of the surface is covered with pebbles and 10 percent with cobbles.

A—0 to 5 inches; pale brown (10YR 6/3) cobbly loam, dark brown (10YR 4/3) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine interstitial pores; mildly alkaline (pH 7.6); clear smooth boundary.

Bt—5 to 11 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong very fine subangular blocky structure; hard, firm, sticky and plastic; common very fine, fine, and medium roots; common very fine and fine interstitial pores; very fine clay films on faces of peds; 15 percent pebbles and 5 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary.

Btk1—11 to 17 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong fine prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common very fine and fine tubular pores; many moderately thick clay films lining pores and on faces of peds; 15 percent pebbles and 10 percent cobbles; common fine lime films and seams; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Btk2—17 to 28 inches; brownish yellow (10YR 6/6) gravelly clay, dark yellowish brown (10YR 4/6) moist; strong medium prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine, fine, and coarse roots; common very fine and fine tubular pores; many moderately thick clay films lining pores and on faces of peds; 15 percent pebbles and 10 percent cobbles; common fine lime films and seams; violently effervescent; moderately alkaline (pH 8.4); clear irregular boundary.

2R—28 inches; fracted andesite; lime coatings on fracture planes.

**Soil Survey**

**Soil name and map unit in which located:** Trunk cobbly loam, 30 to 50 percent slopes, in Trunk-Burrita-Rock outcrop association

**Location in Nevada:** Lander County, Nevada, North Part, survey area; about 31 miles southwest of Battle Mountain; about 2,500 feet west and 1,250 feet south of the northeast corner of sec. 21, T. 26 N., R. 40 E.

**Range in Characteristics**

**Soil moisture content:** Moist late in fall, in winter, and early in spring, dry late in May through October

**Average annual soil temperature:** 48 to 53 degrees F

**Depth to bedrock:** 20 to 40 inches

**Depth to lime accumulation:** 10 to 20 inches

**A horizon:**
Value—5 or 6 dry, 3 to 5 moist
Chroma—2 or 3
Reaction—neutral or mildly alkaline

**Bt horizon:**
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4
Texture—gravely clay loam or gravelly clay that is more than 30 percent sand
Content of clay—35 to 50 percent
Content of rock fragments—15 to 35 percent, mainly pebbles
Reaction—neutral or mildly alkaline in the upper part, moderately alkaline or strongly alkaline in the lower part
Other characteristics—noncalcareous in the upper part, calcareous in the lower part

Tulase Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Silty alluvium that is derived from various kinds of rock and includes some loess and volcanic ash
Positions on landscape: Lagoons, inset fans, fan skirts
Slope: 0 to 8 percent
Mean annual precipitation: About 10 inches
Mean annual temperature: About 48 degrees F
Taxonomic class: Coarse-silty, mixed (calcareous), mesic Durothidic Xeric Torriorthents

Typical Pedon

A1—0 to 2 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.
A2—2 to 6 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.
C—6 to 11 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.
Cq—11 to 21 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; 30 percent strong durinodes 10 to 25 millimeters in diameter; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.
Cqk1—21 to 36 inches; very pale brown (10YR 7/3) very fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine tubular pores; 45 percent strong durinodes 10 to 25 millimeters in diameter; 20 percent discontinuous weak silica cementation; common fine lime filaments; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.
Cqk2—36 to 60 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine tubular pores; 30 percent strong durinodes 10 to 25 millimeters in diameter; 10 percent discontinuous weak silica cementation; common fine lime and gypsum filaments; violently effervescent; strongly alkaline (pH 9.0).

Typical Pedon Location

Soil name and map unit in which located: Tulase silt loam, 2 to 8 percent slopes, in Tulase-Bubus-McConnel association
Location in Nevada: Lander County, Nevada, North Part, survey area; about 28 miles southeast of Battle Mountain; about 2,500 feet east and 100 feet north of the southwest corner of sec. 18, T. 26 N., R. 48 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry late in June through October
Average annual soil temperature: 47 to 52 degrees F
Depth to the Cq horizon: 11 to 20 inches
A horizon:
  Value—6 or 7 dry, 4 or 5 moist
  Chroma—2 or 3
C horizon:
  Value—4 or 5 moist
Cq and Cqk horizons:
  Texture—silt loam or very fine sandy loam
  Other characteristics—20 to 50 percent durinodes; as much as 30 percent discontinuous silica and lime cementation common in the Cqk horizon in most pedons

Typic Argixerolls

Depth class: Shallow and moderately deep
Drainage class: Well drained
Parent material: Residuum derived from granite
Positions on landscape: Side slopes of mountains
Slope: 15 to 50 percent
Mean annual precipitation: About 14 inches
Mean annual temperature: About 43 degrees F
Taxonomic class: Typic Argixerolls

Representative Pedon

About 30 percent of the surface is covered with pebbles.

A1—0 to 2 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine vesicular and interstitial pores; 15 percent pebbles; neutral (pH 7.0); clear smooth boundary.

A2—2 to 4 inches; dark grayish brown (10YR 4/2) coarse sandy loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 5 percent pebbles; neutral (pH 7.0); clear smooth boundary.

Bt1—4 to 10 inches; grayish brown (10YR 5/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; few thin clay films bridging mineral grains; 5 percent pebbles; neutral (pH 6.8); clear smooth boundary.

Bt2—10 to 15 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine and fine roots; few very fine tubular pores; common thin clay films on faces of peads; 5 percent pebbles; neutral (pH 6.8); clear irregular boundary.

Cr—15 to 25 inches; soft, weathered granite.

Typical Pedon Location

Soil name and map unit in which located: Typic Argixerolls gravelly coarse sandy loam in Typic Argixerolls-Torripsammentic Haploxerolls-Gleahn association

Location in Nevada: Lander County, Nevada, South Part. survey area; about 0.5 mile north of Austin; about 800 feet south and 250 feet west of the northeast corner of sec. 19, T. 19 N., R. 44 E.

Range in Characteristics

Soil moisture content: Moist in November to early in July, dry late in July through October

Average annual soil temperature: 42 to 46 degrees F
Thickness of the mollic epipedon: 10 to 20 inches
Depth to paralithic contact: 10 to 40 inches

Control section:
Texture—sandy clay loam, sandy loam, or loam
Content of clay—18 to 30 percent
Content of rock fragments—0 to 15 percent, mainly pebbles
Reaction—neutral or mildly alkaline

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3

Bt horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4

Umbreland Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Parent material: Silty lacustrine sediment derived from various kinds of rock
Positions on landscape: Lake plains, alluvial flats, lake-plain terrace remnants
Slope: 0 to 2 percent
Mean annual precipitation: About 6 inches
Mean annual temperature: About 49 degrees F
Taxonomic class: Fine, montmorillonitic (calcareous), mesic Aeric Halaquepts

Typical Pedon

A—0 to 3 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; strong very fine granular structure; slightly hard, friable, sticky and plastic; few fine and medium roots; many very fine interstitial pores; violently effervescent; very strongly alkaline (pH 9.6); abrupt smooth boundary.

C1—3 to 11 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; common coarse distinct light olive brown (2.5Y 5/4) and brown (10YR 4/3) mottles; moderate medium prismatic structure parting to strong fine granular; hard, firm, very sticky and very plastic; few fine and medium roots and common very fine and coarse roots; few fine and medium tubular pores; many fine salt masses; violently effervescent; very strongly alkaline (pH 9.4); clear smooth boundary.

C2—11 to 24 inches; light olive gray (5Y 6/2) silty clay loam, olive gray (5Y 5/2) moist; common coarse distinct grayish brown (2.5Y 5/2) mottles; moderate medium angular blocky structure; hard, firm, very
sticky and very plastic; few fine roots; common very fine and fine tubular pores; violently effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.

Ck1—24 to 41 inches; light olive gray (5Y 6/2) silty clay loam; olive gray (5Y 4/2) moist; common coarse distinct greenish gray (5GY 6/1) and light gray (N 7/0) mottles; moderate medium angular blocky structure; hard, firm, very sticky and very plastic; common very fine, fine, and medium tubular pores; few medium lime nodules; violently effervescent; very strongly alkaline (pH 9.0); gradual wavy boundary.

Ck2—41 to 60 inches; light gray (5Y 7/2) silty clay loam; olive gray (5Y 5/2) moist; massive; hard, firm, very sticky and very plastic; common very fine and many fine tubular pores; violently effervescent; strongly alkaline (pH 8.6).

**Typical Pedon Location**

*Soil name and map unit in which located:* Umberland silty clay loam. 0 to 2 percent slopes, in Umberland-Wendane association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; 20 miles southeast of Austin; about 2,200 feet south and 2,600 feet east of the northwest corner of sec. 25, T. 16 N., R. 44 E.

**Range in Characteristics**

*Soil moisture content:* Saturated in some part between depths of 20 and 40 inches for at least one month in most years, moist to within 6 inches of the surface as a result of the capillary fringe

*Average annual soil temperature:* 47 to 52 degrees F

*Other characteristics:* Concretions or nodules of lime present at a depth of 15 to 35 inches

*Control section:*

  - Texture—dominantly silty clay loam or silty clay, but strata of clay present in some pedons
  - Content of clay—35 to 50 percent
  - Other characteristics—strongly affected by salt and sodium in the upper part; concentrations of salt and sodium generally decrease with increasing depth

**A horizon:**

  - Hue—10YR, 2.5Y, or 5Y
  - Value—6 to 8 dry, 4 to 6 moist
  - Chroma—2 to 4
  - Structure—strong, very fine or fine, and granular (as a result of flocculation), or massive

**C horizon:**

  - Hue—2.5Y or 5Y
  - Value—6 to 8 dry, 4 to 6 moist
  - Chroma—2 to 4
  - Reaction—strongly alkaline or very strongly alkaline, commonly decreasing in alkalinity with increasing depth

**Unius Series**

*Depth class:* Shallow to duripan

*Drainage class:* Well drained

*Parent material:* Mixed alluvium that is derived from volcanic and sedimentary rock and includes some loess and volcanic ash

*Positions on landscape:* Fan piedmont remnants

*Slope:* 2 to 15 percent

*Mean annual precipitation:* About 10 inches

*Mean annual temperature:* About 45 degrees F

**Taxonomic class:** Loamy, mixed, mesic, shallow Haploxerolic Durothids

**Typical Pedon**

About 50 percent of the surface is covered with pebbles.

A1—0 to 2 inches; pale brown (10YR 6/3) gravelly silt loam, brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; very few very fine and fine roots; common very fine and fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

A2—2 to 4 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, friable, sticky and plastic; few medium roots and common very fine and fine roots; common very fine and fine interstitial pores; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bw1—4 to 8 inches; light yellowish brown (10YR 6/4) silt loam, yellowish brown (10YR 5/4) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine interstitial pores; few thin clay films on peds and in pores; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bw2—8 to 12 inches; white (10YR 8/2) gravelly loam, light yellowish brown (10YR 6/4) moist; moderate medium angular blocky structure; hard, firm, sticky and slightly plastic; common very fine and fine roots; common very fine interstitial pores; 20 percent pebbles and duripan fragments; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary.
Bqkm—12 to 22 inches; white (10YR 8/2), strongly cemented duripan, light gray (10YR 7/2) moist; massive; very hard, very firm; brittle; very few very fine roots; very few very fine interstitial pores; violently effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

Cq—22 to 44 inches; white (10YR 8/2) gravelly fine sandy loam, very pale brown (10YR 7/3) moist; massive; hard, firm, nonsticky and nonplastic; continuous weak silica cementation with strongly cemented strata; 25 percent pebbles and duripan fragments; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

2Ck—44 to 60 inches; very pale brown (10YR 7/3) gravelly loamy sand, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; 20 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2).

**Typical Pedon Location**

*Soil name and map unit in which located:* Unius gravelly silt loam, 2 to 8 percent slopes, in Unius-Orovada association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; about 26 miles east of Austin, in the Monitor Valley; about 1,000 feet east and 1,200 feet south of the northwest corner of sec. 17, T. 18 N., R. 48 E.

**Range in Characteristics**

*Soil moisture content:* Moist in some part from November through May, dry in June through October

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to the duripan:* 10 to 20 inches

*Reaction:* Mildly alkaline to strongly alkaline

*Calcium carbonate equivalent:* 5 to 15 percent

*Control section:*

- Content of clay—18 to 25 percent
- Content of rock fragments—0 to 25 percent pebbles and duripan fragments

*A horizon:*

- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3
- Effervescence—slightly effervescent or strongly effervescent

*Bw1 horizon:*

- Value—5 or 6 dry, 4 or 5 moist
- Chroma—2 to 4
- Texture—silt loam or loam
- Content of rock fragments—0 to 10 percent

*Bw2 horizon (when present):*

- Value—6 to 8 dry, 4 to 6 moist

*Chroma—2 to 4*

*Texture—gravelly loam, gravelly silt loam, or loam*

*Content of rock fragments—10 to 30 percent pebbles and duripan fragments*

*Bqkm horizon:*

- Value—6 to 8 dry, 5 or 6 moist
- Chroma—2 to 4

*Other characteristics—dominantly strongly cemented, but some weakly cemented strata*

**2Ck horizon:*

- Content of rock fragments—15 to 30 percent pebbles

**Unsel Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Mixed alluvium

*Positions on landscape:* Fan piedmont remnants

*Slope:* 0 to 4 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* 51 degrees F

*Taxonomic class:* Fine-loamy, mixed, mesic Duric Haplargids

**Typical Pedon**

About 80 percent of the surface is covered with pebbles.

*A1—0 to 3 inches; light gray (10YR 7/2) gravelly fine sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; many very fine and common fine interstitial pores; 20 percent pebbles; strongly alkaline (pH 8.6); clear smooth boundary.*

*A2—3 to 8 inches; light gray (10YR 7/2) gravelly fine sandy loam, brown (10YR 5/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; many very fine interstitial pores and common very fine tubular pores; 15 percent pebbles; strongly alkaline (pH 8.6); abrupt smooth boundary.*

*Bt—8 to 13 inches; very pale brown (10YR 7/3) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; many very fine tubular pores; common thin clay films on faces of peds; 20 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.*

*Btk—13 to 18 inches; very pale brown (10YR 7/3) gravelly clay loam, yellowish brown (10YR 5/4)
moist; moderate medium and fine subangular blocky structure; hard, friable, sticky and plastic; many very fine roots; common very fine tubular pores; common thin clay films on faces of peds; 25 percent pebbles; thick lime coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

**Bqk—18 to 31 inches; very pale brown (10YR 7/3)**
gravelly sandy clay loam, light yellowish brown (10YR 6/4) moist; moderate medium and fine subangular blocky structure; hard, friable, sticky and plastic; many very fine roots; common very fine tubular pores; 60 percent discontinuous strong cementation; 35 percent pebbles; thick lime and silica coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

**2C—31 to 60 inches; very pale brown (10YR 7/3)**
extremely gravelly loamy sand, brown (10YR 5/3) moist: single grain; loose, nonsticky and nonplastic; many very fine roots; many fine interstitial pores; 65 percent pebbles; violently effervescent; strongly alkaline (pH 8.8).

**Typical Pedon Location**

**Soil name and map unit in which located:** Unsel gravelly fine sandy loam, 2 to 4 percent slopes, in Unsel-Wardenot-Belted association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 25 miles south of Austin; about 2,000 feet north and 40 feet east of the southwest corner of sec. 26, T. 16 N., R. 45 E.

**Range in Characteristics**

**Soil moisture content:** Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively between July and October as a result of convection storms

**Average annual soil temperature:** 53 to 59 degrees F

**Depth to the Bqk horizon:** 10 to 22 inches

**Depth to the 2C horizon:** 20 to 36 inches

**Control section:**

**Texture:** clay loam or sandy clay loam

**Content of clay:** 27 to 35 percent

**Content of rock fragments:** 15 to 30 percent

**A horizon:**

**Value:** 6 or 7 dry, 4 or 5 moist

**Chroma:** 2 to 4 dry or moist

**Structure:** platy, subangular blocky, or massive

**Reaction:** moderately alkaline to very strongly alkaline

**Bt and Btk horizons:**

**Value:** 5 to 7 dry, 3 to 6 moist

**Chroma:** 2 to 4

**Content of clay:** 27 to 35 percent

**Texture:** clay loam or sandy clay loam

**Content of rock fragments:** 15 to 30 percent

**Structure:** weak or moderate, fine or medium, and subangular blocky; weak, medium or coarse, and prismatic; or massive

**Reaction:** mildly alkaline to strongly alkaline

**Bqk horizon:**

**Value:** 7 or 8 dry, 4 to 6 moist

**Chroma:** 2 to 4

**2C horizon:**

**Value:** 7 or 8 dry, 3 to 5 moist

**Chroma:** 2 to 4

**Content of rock fragments:** 50 to 70 percent

**Unsel Variant**

**Depth class:** Moderately deep

**Drainage class:** Well drained

**Parent material:** Residual and colluvium derived from tuffaceous sediment

**Positions on landscape:** Side slopes of fan piedmonts

**Slope:** 15 to 30 percent

**Mean annual precipitation:** About 7 inches

**Mean annual temperature:** About 49 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic Duric Haplargids

**Typical Pedon**

About 45 percent of the surface is covered with pebbles and 15 percent with cobbles.

**A—0 to 2 inches; light gray (10YR 7/2)** very gravelly loam, brown (10YR 5/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; few fine roots; common very fine and few fine vesicular pores; 40 percent pebbles; moderately alkaline (pH 8.2); abrupt smooth boundary.

**BA—2 to 4 inches; light gray (10YR 7/2)** very gravelly clay loam, brown (10YR 5/3) moist; strong thin platy structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; common fine vesicular pores and few very fine tubular pores; 30 percent pebbles and 10 percent cobbles; moderately alkaline (pH 8.4); abrupt smooth boundary.

**BT—4 to 11 inches; pale brown (10YR 6/3)** gravelly clay loam, dark brown (10YR 4/3) moist; common white (10YR 8/2) bleached faces of peds concentrated in the lower part; strong medium angular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine
and fine tubular pores; common thin and moderately thick clay films on peds; 20 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary.

Btk—11 to 15 inches; very pale brown (10YR 7/3) gravelly clay loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; many thin and common moderately thick clay films on peds; 25 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.

Bqk—15 to 22 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; 30 percent medium durinodes; few thin silica pendants on the underside of rock fragments; 25 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.

Cr—22 to 46 inches; soft tuff.

**Typical Pedon Location**

*Soil name and map unit in which located:* Unsel Variant very gravelly loam, 30 to 50 percent slopes, in Grassval-Grina-Unsel Variant association

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 56 miles south of Battle Mountain; about 300 feet south and 1,400 feet west of the northeast corner of sec. 22, T. 26 N., R. 46 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in May to early in November

*Average annual soil temperature:* 47 to 52 degrees F

*Depth to soft bedrock:* 20 to 40 inches

*Reaction:* Moderately alkaline to very strongly alkaline, increasing in alkalinity with increasing depth

*Control section:*

  Content of clay—27 to 35 percent
  Content of rock fragments—20 to 30 percent when mixed, mainly pebbles

*A horizon:*

  Hue—10YR or 2.5Y
  Chroma—2 to 4

*Bt horizon:*

  Hue—10YR or 2.5Y
  Value—6 to 8 dry, 4 to 6 moist
  Chroma—2 to 4
  Exchangeable sodium percentage—less than 5 in the upper part, 5 to 15 in the lower part

**Bqk horizon:**

  Hue—10YR or 2.5Y
  Value—6 to 8 dry, 5 or 6 moist
  Chroma—2 to 4
  Texture—loam or sandy loam
  Content of rock fragments—20 to 30 percent when mixed, mainly pebbles
  Other characteristics—20 to 50 percent durinodes or discontinuous weak silica cementation

**Valmy Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Thin loess cap that is high in content of volcanic ash over loamy alluvium

*Positions on landscape:* Inset fans, fan skirts

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 51 degrees F

*Taxonomic class:* Coarse-loamy, mixed (calcareous), mesic Durorthic Torriorthents

**Typical Pedon**

*A1—0 to 3 inches; light brownish gray (10YR 6/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; many very fine vesicular pores; 5 percent pebbles; slightly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.*

*A2—3 to 6 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common very fine tubular pores; 5 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary.*

*C—6 to 18 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; few very fine tubular pores; 10 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.2); gradual wavy boundary.*

*Cqk—18 to 29 inches; pale brown (10YR 6/3) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; few very fine tubular pores; 40 percent hard, firm durinodes 3 to 30 millimeters in diameter; 5 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.4); gradual wavy boundary.*
Ck—29 to 46 inches; light yellowish brown (2.5Y 6/4) fine sandy loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few very fine tubular pores; 5 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary.

2C'qk—46 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam, olive brown (2.5Y 4/4) moist; massive; hard, firm, sticky and plastic; few very fine tubular pores; 90 percent discontinuous weak cementation; strongly effervescent; strongly alkaline (pH 8.4).

Typical Pedon Location

Soil name and map unit in which located: Valmy very fine sandy loam, silty substratum, 0 to 2 percent slopes, in Batan-Wendane-Valmy association

Location in Nevada: Lander County, Nevada, North Part, survey area; about 33 miles southeast of Battle Mountain; about 2,300 feet north and 300 feet west of the southeast corner of sec. 7, T. 27 N., R. 48 E.

Range in Characteristics

Soil moisture content: Moist for short periods in winter and spring, dry in May through November

Average annual soil temperature: 47 to 53 degrees F

Depth to the Cq horizon: 8 to 20 inches

Content of durinodes: Ranges from 5 to 65 percent in individual layers, including more than 25 percent in one or more layers that are more than 6 inches thick

Depth to unconformable material: Dominantly 30 to 50 inches, but more than 50 inches to sandy material in some pedons

Control section:

Texture—dominantly fine sandy loam or sandy loam, but strata of very fine sandy loam or coarse sandy loam in some pedons

Content of clay—5 to 15 percent

Content of rock fragments—0 to 30 percent, mainly pebbles

A horizon:

Hue—10YR or 2.5Y
Value—5 or 6 dry, 3 or 4 moist
Reaction—moderately alkaline or strongly alkaline

C horizon:

Hue—10YR or 2.5Y
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 to 4
Reaction—strongly alkaline or very strongly alkaline

Effervescence—slightly effervescent to violently effervescent

Other characteristics—contains durinodes that are hard to extremely hard, firm or very firm, or brittle

2C horizon:
Texture—dominantly gravelly sand or very gravelly sand, but strata of silty clay loam below a depth of 40 inches in some pedons

Content of clay—1 to 5 percent

Content of rock fragments—20 to 55 percent

Reaction—strongly alkaline or very strongly alkaline

Walti Series

Depth class: Moderately deep
Drainage class: Well drained
Parent material: Colluvium and residuum derived from rhyolite, andesite, dacite, tuff, and quartzite

Positions on landscape: Crests and side slopes of mountains

Slope: 8 to 50 percent

Mean annual precipitation: About 14 inches

Mean annual temperature: About 44 degrees F

Taxonomic class: Fine, montmorillonitic, frigid Aridic Argixerolls

Typical Pedon

About 20 percent of the surface is covered with pebbles and 40 percent with cobbles and stones.

A—0 to 4 inches; grayish brown (10YR 5/2) extremely cobbly loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine vesicular pores; 35 percent pebbles and 25 percent cobbles; neutral (pH 6.8); clear smooth boundary.

Bt1—4 to 10 inches; brown (7.5YR 5/2) gravelly clay loam, dark brown (7.5YR 3/2) moist; moderate fine angular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; common thin clay films on peds; 15 percent pebbles and 5 percent cobbles; neutral (pH 7.0); abrupt wavy boundary.

2Bt2—10 to 24 inches; brown (7.5YR 5/4) clay, dark brown (7.5YR 3/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; very hard, firm, very sticky and very plastic; few very fine and fine roots along faces of peds; common very fine and fine tubular pores; common moderately thick clay films on peds; 10 percent pebbles; neutral (pH 7.0); gradual wavy boundary.
2Bt3—24 to 30 inches; pinkish gray (7.5YR 6/2) clay, dark brown (7.5YR 4/2) moist; weak medium prismatic structure; very hard, firm, very sticky and very plastic; few fine roots; few very fine and fine tubular pores; common thin clay films on faces of ped; 10 percent pebbles; neutral (pH 7.0); abrupt wavy boundary.

3R—30 inches; fractured andesite.

**Typical Pedon Location**

**Soil name and map unit in which located:** Walti extremely cobbly loam, 30 to 50 percent slopes, in Walti-Softscrap-Bucan association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 17 miles west of Austin; about 1,300 feet east and 2,275 feet south of the northeast corner of sec. 14, T. 20 N., R. 46 E.

**Range in Characteristics**

**Soil moisture content:** Moist in winter and spring, dry late in June to mid-October

**Average annual soil temperature:** 44 to 46 degrees F

**Thickness of the mollic epipedon:** 7 to 12 inches (commonly includes the upper part of the argillic horizon)

**Depth to bedrock:** 20 to 30 inches

**Control section:**
- Content of clay—40 to 50 percent
- Content of rock fragments—5 to 25 percent, mainly pebbles
- Reaction—neutral or mildly alkaline

**A horizon:**
- Value—4 or 5 dry
- Chroma—2 or 3

**Bt horizon:**
- Hue—10YR or 7.5YR
- Value—dominantly 4 or 5 dry, but 6 dry in the lower part; 3 or 4 moist
- Chroma—3 or 4

**Texture:** clay loam or gravelly clay loam that is 27 to 35 percent clay in the upper part, clay or gravelly clay that is 50 to 60 percent clay in the lower part

**Content of rock fragments:** 5 to 25 percent, mostly pebbles and cobbles

**Structure:** prismatic or angular blocky

---

**Wardenot Series**

**Depth class:** Very deep

**Drainage class:** Excessively drained

**Parent material:** Alluvium derived from various kinds of rock

**Positions on landscape:** Fan skirts, inset fans

**Slope:** 2 to 4 percent

**Mean annual precipitation:** About 7 inches

**Mean annual temperature:** About 51 degrees F

**Taxonomic class:** Sandy-skeletal, mixed, mesic Typic Torriorthents

**Typical Pedon**

A—0 to 5 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; many very fine vesicular pores; 20 percent pebbles; strongly alkaline (pH 8.8); clear smooth boundary.

Bk—5 to 9 inches; very pale brown (10YR 7/3) gravelly very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; many very fine tubular pores; 25 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

Bqk1—9 to 20 inches; very pale brown (10YR 7/4) very gravelly loamy fine sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; many very fine interstitial pores; 55 percent pebbles; thick limy coatings and pendants and thin silica coatings and pendants on the underside of pebbles; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bqk2—20 to 60 inches; very pale brown (10YR 7/3) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; many very fine and few fine roots; many very fine interstitial pores; 50 percent pebbles; thick lime coatings and pendants and thin silica coatings and pendants on the underside of pebbles; strongly effervescent; moderately alkaline (pH 8.4).

**Typical Pedon Location**

**Soil name and map unit in which located:** Wardenot gravelly fine sandy loam, 2 to 4 percent slopes, in Wardenot-Laxel association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 22 miles south of Austin; about 1,200 feet south and 1,300 feet west of the northeast corner of sec. 14, T. 16 N., R. 45 E.

**Range in Characteristics**

**Soil moisture content:** Usually dry, but moist in some part for short periods in winter and early in spring and for 10 to 20 days cumulatively between July and October as a result of convection storms

**Average annual soil temperature:** 53 to 59 degrees F
Lander County, Nevada, South Part

Reaction: Mildly alkaline or strongly alkaline, commonly increasing in alkalinity with increasing depth

Control section:
- Texture (of the fraction less than 2 millimeters)—averages loamy sand
- Content of rock fragments—40 to 75 percent, including cobbles and stones

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Effervescence—dominantly non-effervescent to strongly effervescent, but violently effervescent in some pedons that are influenced by eolian deposits
- Structure—dominantly massive, platy, or subangular blocky, but single grain at top in some pedons

Bq and Bk horizons:
- Value—5 to 7 dry, 3 to 5 moist
- Chroma—2 to 4
- Texture—stratified extremely gravelly fine sandy loam to cobbly loamy sand, strata of very gravelly or cobbly sandy loam or fine sandy loam in the upper part
- Content of rock fragments—averages 40 to 75 percent; individual strata as little as 25 percent
- Effervescence—strongly effervescent or violently effervescent
- Structure—single grain or massive
- Other characteristics—common lime and silica pendants

Welch Series

Depth class: Very deep
Drainage class: Poorly drained
Parent material: Alluvium derived from volcanic rock
Positions on landscape: Flood plains and inset fans in narrow mountain valleys
Slope: 2 to 8 percent
Mean annual precipitation: About 14 inches
Mean annual temperature: About 42 degrees F
Taxonomic class: Fine-loamy, mixed, frigid Cumulic Haplaquolls

Typical Pedon

A1—0 to 2 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; many very fine interstitial pores; neutral (pH 7.2); abrupt smooth boundary.

A2—2 to 4 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine interstitial pores; mildly alkaline (pH 7.6); abrupt smooth boundary.

A3—4 to 26 inches; dark gray (10YR 4/1) clay loam, very dark gray (10YR 3/1) moist; few fine distinct reddish yellow (7.5YR 6/6) mottles; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; many very fine and fine roots and common medium roots; common very fine, fine, and coarse tubular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.

AC—26 to 30 inches; light brownish gray (10YR 6/2) clay loam, very dark grayish brown (10YR 3/2) moist; common coarse distinct reddish yellow (7.5YR 6/6) mottles; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; many very fine and common coarse tubular pores; slightly effervescent; mildly alkaline (pH 8.0); clear smooth boundary.

C—30 to 40 inches; light brownish gray (10YR 6/2) clay loam, dark grayish brown (10YR 4/2) moist; common coarse distinct reddish yellow (7.5YR 6/6) mottles; weak medium and coarse subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine roots; many very fine and few coarse tubular pores; mildly alkaline (pH 7.6); abrupt smooth boundary.

Ab—40 to 60 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; common coarse distinct reddish yellow (7.5YR 6/6) mottles; moderate medium and coarse prismatic structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; many very fine and few medium and coarse tubular pores; mildly alkaline (pH 7.6).

Typical Pedon Location

Map unit in which located: Welch loam, drained, 2 to 8 percent slopes

Location in Nevada: Lander County, Nevada, North Part, survey area; about 22 miles southeast of Battle Mountain; about 500 feet south and 1,200 feet west of the northeast corner of sec. 34, T. 29 N., R. 46 E.

Range in Characteristics

Soil moisture content (undrained areas): Saturated at or near the surface for at least 1 month, commonly
late in winter and early in spring, in most years; then drops to a depth of 18 to 36 inches from early in spring through September

Average annual soil temperature: About 48 degrees F

**Other characteristics:** Organic matter content of the mollic epipedon decreases irregularly with increasing depth; a buried A horizon commonly present; gravelly strata or strata of silty clay loam, silt loam, clay, loam, very fine sandy loam, or sandy loam present in some pedons

**Control section:**
Texture—dominantly stratified sandy clay loam or clay loam
Content of clay—27 to 35 percent when mixed
Other characteristics—mineralogy is mixed, but the parent material has a high content of vitric pyroclastic material

**A horizon:**
Hue—10YR to 5Y, or neutral
Value—3 to 5 dry, 2 or 3 moist
Chroma—0 to 3 in the upper part, 0 to 2 in the lower part
Structure—weak to strong, thin or medium, and platy: weak or moderate, very fine to medium, and prismatic, granular, or subangular blocky; or massive (only in pedons that have a thicker A horizon)
Consistence—soft to hard (dry), very friable or friable (moist), nonsticky to sticky and slightly plastic to plastic (wet)
Reaction—slightly acid or neutral
Other characteristics—high-chroma, yellowish iron mottles in some pedons

**C horizon:**
Hue—10YR, 5Y to 5B, or neutral
Value—5 to 8 dry, 3 to 5 moist
Chroma—0 or 1
Reaction—slightly acid to mildly alkaline
Other characteristics—high-chroma iron mottles common in many pedons

**Wendane Series**

**Depth class:** Very deep
**Drainage class:** Somewhat poorly drained
**Parent material:** Silty alluvium derived from volcanic rock, tuff, loess, and volcanic ash

**Positions on landscape:** Alluvial flats
**Slope:** 0 to 2 percent
**Mean annual precipitation:** About 7 inches

**Mean annual temperature:** About 48 degrees F

**Taxonomic class:** Fine-silty, mixed (calcareous), mesic Aeric Halaquepts

**Typical Pedon**

A1—0 to 1 inch; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; strong thin platy structure; slightly hard, very friable, slightly sticky and plastic; few medium roots; many very fine and fine interstitial pores; violently effervescent; very strongly alkaline (pH 9.6); abrupt smooth boundary.

A2—1 to 7 inches; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; few medium distinct white (10YR 8/1) mottles; moderate thin platy structure; slightly hard, friable, sticky and plastic; few medium roots and common very fine and fine roots; common very fine and fine interstitial and tubular pores; common fine lime filaments or threads; violently effervescent; very strongly alkaline (pH 9.6); clear smooth boundary.

C—7 to 18 inches; pale brown (10YR 6/3) silt loam, dark yellowish brown (10YR 4/4) moist; few medium distinct white (10YR 8/1) mottles; moderate medium subangular blocky structure; soft, very friable, sticky and plastic; few medium and fine roots and common very fine and coarse roots; common fine and medium tubular pores; violently effervescent; very strongly alkaline (pH 9.4); clear smooth boundary.

Cqk1—18 to 24 inches; pale brown (10YR 6/3) silty clay loam, dark yellowish brown (10YR 4/4) moist; common medium distinct mottles that are brown (7.5YR 5/4) and gray (5Y 5/1) moist; massive; slightly hard, friable, sticky and plastic; many very fine and fine roots and few medium roots; many very fine and fine and common medium tubular pores; 25 percent strongly cemented durinodes; few moderately thick reoriented silt linings in pores; violently effervescent; strongly alkaline (pH 8.9); clear smooth boundary.

Cqk2—24 to 37 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 4/3) moist; common medium distinct mottles that are brown (7.5YR 5/4) and gray (5Y 5/1) moist; massive; slightly hard, friable, sticky and plastic; many very fine, fine, and medium roots; many very fine, fine, and medium tubular pores; 25 percent strongly cemented durinodes; 10 percent discontinuous weak cementation; few moderately thick reoriented silt linings in pores; violently effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

2Ab—37 to 48 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; many coarse distinct mottles that are dark
grayish brown (10YR 4/2) and gray (5Y 5/1) moist; massive; slightly hard, friable, very sticky and plastic; few fine roots; common fine and medium tubular pores; 10 percent discontinuous weak cementation; few moderately thick reoriented silt linings in pores; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

2C—48 to 62 inches: light gray (10YR 7/2) silty clay loam, light brownish gray (10YR 6/2) moist; massive; slightly hard, friable, very sticky and very plastic; few fine roots; common fine and medium tubular pores; violently effervescent; strongly alkaline (pH 8.8).

Typical Pedon Location

Soil name and map unit in which located: Wendane silt loam, 0 to 2 percent slopes, in Wendane-Umberland association

Location in Nevada: Lander County, Nevada, South Part, survey area: about 16 miles east of Austin; about 50 feet north and 50 feet east of the southwest corner of sec. 18, T. 16 N., R. 50 E.

Range in Characteristics

Soil moisture content: Saturated to a depth of 28 to 40 inches in spring in most years; dry in mid-summer to mid-winter; moist in mid-winter, in spring, and early in summer

Depth to apparent seasonal high water table: 30 to 48 inches in February to July, except in areas that have been drained

Average annual soil temperature: 47 to 52 degrees F

Depth to the Cqk horizon: 11 to 20 inches

Depth to high-chroma mottles: 13 to 27 inches

Content of salt: Commonly strongly affected by salt in the upper part, nonsalty or slightly affected by salt in the lower part

Exchangeable sodium percentage: 15 to 70 in at least half of the upper 20 inches, decreasing in alkalinity with increasing depth

Reaction: Moderately alkaline to very strongly alkaline

Other characteristics: Mineralogy is mixed, but is strongly influenced by volcanic ash and other pyroclastic material; unformable stratified gravelly sand or very gravelly sand common below a depth of 40 inches in some pedons

Control section:

Content of clay—20 to 30 percent when mixed
Texture—averages silt loam or silty clay loam that is less than 15 percent fine sand or coarser particles

A horizon:

Value—6 or 7 dry, 4 to 6 moist
Chroma—1 to 4

Structure—thin to thick and platy, fine and granular, or massive
Consistence—very friable to firm (moist), slightly sticky to very sticky and slightly plastic to very plastic (wet)

C and Cqk horizons:

Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 7 moist
Chroma—1 to 4
Texture—stratified very fine sandy loam, silt loam, silty clay loam, and clay loam
Other characteristics—strata of volcanic ash 4 to 10 inches thick common between depths of 13 and 36 inches

Cqk horizon:

Thickness—13 to more than 30 inches
Other characteristics—20 to 35 percent weakly or strongly cemented durinodes in a friable matrix; as much as 30 percent discontinuous weak silica cementation in individual strata

Whirlo Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Mixed alluvium that includes some loess
Positions on landscape: Fan aprons, inset fans, fan skirts
Slope: 0 to 8 percent
Mean annual precipitation: About 7 inches
Mean annual temperature: About 48 degrees F

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Cambortids

Typical Pedon

A1—0 to 4 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate very thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine random roots; many very fine and few fine vesicular pores; 5 percent pebbles; very slightly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

A2—4 to 7 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate very thin and thin platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine random roots and very few fine oblique roots; common very fine vesicular and tubular pores; 5 percent pebbles; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bw—7 to 12 inches; pale brown (10YR 6/3) silt loam,
brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and plastic; many very fine random roots and very few fine oblique roots; common very fine and few fine tubular pores; 5 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary.

2Bk1—12 to 24 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine random roots and very few fine oblique roots; common very fine tubular pores; 35 percent pebbles; 10 percent weak durinodes 10 to 30 millimeters in diameter; few fine lime filaments and thin lime coatings on pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

2Bk2—24 to 60 inches; variegated extremely gravelly coarse sandy loam; single grain; loose, nonsticky and slightly plastic; common very fine random roots; 5 percent cobbles and 70 percent pebbles; lime coatings on 50 percent of pebbles; strongly effervescent; moderately alkaline (pH 8.4).

**Typical Pedon Location**

*Map unit in which located:* Whirlo silt loam, 0 to 2 percent slopes

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 11 miles southeast of Battle Mountain; about 1,900 feet west and 1,450 feet north of the southeast corner of sec. 29, T. 31 N., R. 46 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in mid-May through November

*Average annual soil temperature:* 47 to 53 degrees F

*Depth to the 2Bk horizon:* 10 to 20 inches

**Control section:**

*Content of clay:* 5 to 15 percent

*Content of rock fragments:* 35 to 70 percent, mainly pebbles

**A horizon:**

*Value:* 6 or 7 dry, 3 or 4 moist

*Chroma:* 2 or 3

*Structure:* Weak or moderate, thin to thick, and platy, or massive

*Reaction:* Neutral to moderately alkaline

**Bw horizon:**

*Value:* 6 or 7 dry, 4 or 5 moist

*Chroma:* 2 or 3

*Texture:* Gravelly sandy loam, fine sandy loam, very fine sandy loam, silt loam, or gravelly loam

*Content of rock fragments:* 0 to 30 percent pebbles

*Structure:* Weak or moderate, fine or medium, and subangular blocky; weak, coarse, and prismatic; or massive

*Reaction:* Neutral to moderately alkaline

**2Bk horizon:**

*Hue:* 10YR or 2.5Y

*Value:* 6 to 8 dry, 3 to 6 moist

*Chroma:* 2 or 3

*Texture:* Stratified very gravelly loam to extremely gravelly coarse sandy loam

*Content of rock fragments:* 35 to 75 percent, mainly pebbles and some cobbles and stones

*Reaction:* Moderately alkaline or strongly alkaline

*Effervescence:* Slightly effervescent to violently effervescent

*Other characteristics:* As much as 10 percent weak durinodes common in the lower part in some pedons

**Wholan Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Mantle of loess over silty alluvium derived from various kinds of rock

*Positions on landscape:* Inset fans, fan skirts

*Slope:* 0 to 2 percent

*Mean annual precipitation:* About 7 inches

*Mean annual temperature:* About 49 degrees F

*Taxonomic class:* Coarse-silty, mixed, mesic Typic Camborthids

**Typical Pedon**

*A—* 0 to 5 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; mildly alkaline (pH 7.8); abrupt smooth boundary.

*Bw—* 5 to 13 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; mildly alkaline (pH 7.8); clear smooth boundary.

*Bk—* 13 to 21 inches; white (10YR 8/2) very fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; few fine lime filaments or threads; strongly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary.
C—21 to 25 inches; white (10YR 8/1) very fine sandy loam, light brownish gray (10YR 6/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; slightly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

Cq—25 to 60 inches; light gray (10YR 7/2) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 5 percent weakly cemented durinodes; strongly effervescent; very strongly alkaline (pH 9.2).

Typical Pedon Location

Soil name and map unit in which located: Wholan silt loam, 0 to 2 percent slopes, in McConnel-Rasille-Wholan association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 21 miles west of Austin; about 1,200 feet south and 400 feet west of the northeast corner of sec. 1, T. 18 N., R. 39 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry late in May through October

Average annual soil temperature: 47 to 53 degrees F

Depth to the Bk horizon: 11 to 24 inches

Reaction: Moderately alkaline to very strongly alkaline, increasing in alkalinity with increasing depth

Content of salt and sodium: Nonsaline and nonsodic or slightly affected by salt and sodium to a depth of 30 inches, moderately or strongly affected below this depth.

Other characteristics: Thin strata that have as much as 5 percent very hard, firm, brittle durinodes 0.5 to 0.75 inch in diameter present in the C horizon in some pedons

Control section:
  Content of clay—5 to 15 percent
  Texture—dominantly silt loam or very fine sandy loam, but thin strata of loam or fine sandy loam in some pedons

A horizon:
  Value—5 to 7 dry, 3 to 5 moist (5 dry and 3 moist in the A1 horizon only)
  Chroma—2 to 4
  Structure—weak or moderate, very thin to medium and platy or coarse and subangular blocky; or massive
  Consistence—soft or slightly hard
  Effervescence—noneffervescent or slightly effervescent

Bw horizon:
  Value—6 or 7 dry, 4 or 5 moist
  Chroma—2 to 4
  Structure—weak, fine to coarse and subangular blocky or medium or coarse and prismatic; or massive

Bk and C horizons:
  Value—6 to 8 dry, 4 to 6 moist
  Chroma—2 to 4
  Content of durinodes—as much as 5 percent in some strata in some pedons
  Other characteristics—few to many, fine or medium veins and soft masses of lime in the Bk horizon, no segregated lime in the C horizon

Wieland Series

Depth class: Very deep

Drainage class: Well drained

Parent material: Mixed alluvium that is derived from volcanic and sedimentary rock and includes some loess and volcanic ash

Positions on landscape: Summits and side slopes of fan piedmont remnants

Slope: 2 to 15 percent

Mean annual precipitation: About 9 inches

Mean annual temperature: About 48 degrees F

Taxonomic class: Fine, montmorillonitic, mesic Durixerollic Hapludolls

Typical Pedon

About 20 percent of the surface is covered with pebbles.

A1—0 to 5 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine vesicular pores; 15 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.

A2—5 to 8 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine interstitial pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary.

Bt1—8 to 14 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; few very fine and fine roots; few
very fine tubular pores; few thin clay films on faces of peds; 15 percent pebbles; mildly alkaline (pH 7.6); gradual wavy boundary.

Bt2—14 to 20 inches; yellowish brown (10YR 5/4) gravelly clay, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure parting to strong medium angular blocky; hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; many moderately thick and few thick clay films on faces of peds; common silica and lime pendants on the underside of rock fragments; 30 percent pebbles; few fine irregular seams of lime; slightly effervescent; moderately alkaline (pH 8.0); gradual smooth boundary.

Bqk1—20 to 25 inches; very pale brown (10YR 7/4) very gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; massive; very hard, firm, slightly sticky and slightly plastic; few fine roots; few very fine and fine tubular pores; 40 percent discontinuous weak silica cementation; many silica and lime pendants on the underside of rock fragments; 50 percent pebbles and 5 percent cobbles; common fine irregular seams of lime; violently effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.

Bqk2—25 to 44 inches; very pale brown (10YR 8/4), continuous, weakly silica-cemented gravelly loam, light yellowish brown (10YR 6/4) moist; massive; very hard, very firm, slightly sticky and slightly plastic; few fine roots; few very fine tubular pores; 20 percent strong durinodes 5 to 25 millimeters in diameter, mostly in few thin strata of noncemented material; 25 percent pebbles; violently effervescent; moderately alkaline (pH 8.4); gradual smooth boundary.

Cqk—44 to 60 inches; light gray (10YR 7/2), continuous, weakly silica-cemented gravelly loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few fine tubular pores; 15 percent pebbles; violently effervescent; moderately alkaline (pH 8.4).

Typical Pedon Location

Soil name and map unit in which located: Wieland gravelly loam, 4 to 15 percent slopes, in Allor-Wieland association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 8 miles northwest of Austin; about 800 feet east and 750 feet north of the southwest corner of sec. 21, T. 20 N., R. 45 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist late in October to early in June

Average annual soil temperature: 47 to 52 degrees F

Depth to continuous weak silica cementation: 19 to 30 inches

Depth to the base of the Bt horizon: 19 to 30 inches

Other characteristics: 2C horizon that is variegated very gravelly loam present at a depth of 40 inches or more in some pedons; 2Cq horizon that is 50 to 65 percent pebbles present in some pedons

Control section (when mixed):

Content of clay—40 to 55 percent
Content of rock fragments—15 to 35 percent pebbles

A horizon:

Value—5 or 6 dry
Chroma—2 or 3
Structure—weak or moderate, very thin to very thick, and platy; or weak or moderate, fine to coarse, and subangular blocky
Reaction—mildly alkaline or moderately alkaline

Bt1 horizon (when present):

Value—5 or 6 dry
Chroma—2 or 3
Structure—weak or moderate, very fine, fine, or medium, and subangular blocky or prismatic
Consistence—very friable or friable (moist), sticky or very sticky and plastic or very plastic (watery)
Reaction—mildly alkaline or moderately alkaline

Bt2 horizon:

Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry, 3 or 4 moist
Content of clay—dominantly 40 to 55 percent when mixed, but as much as 60 percent clay in some pedons
Content of rock fragments—15 to 35 percent pebbles when mixed
Structure—weak or moderate, fine to coarse, and prismatic, or weak or moderate, very fine, fine, or medium, and angular blocky
Reaction—moderately alkaline or strongly alkaline
Other characteristics—slightly effervescent or strongly effervescent and lime filaments common in the lower part in some pedons

Bqk and Cqk horizons:

Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—1 to 4
Effervescence—non-effervescent to violently effervescent
Other characteristics—thin, discontinuous, weakly cemented Bqk horizon above the continuously cemented layer in some pedons; relict mottles
Xine Series

Depth class: Moderately deep  
Drainage class: Well drained  
Parent material: Residuum derived from limestone and calcareous shale  
Positions on landscape: Side slopes of mountains  
Slope: 30 to 75 percent  
Mean annual precipitation: About 12 inches  
Mean annual temperature: About 44 degrees F  
Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Calcixerolls  

Typical Pedon  

About 15 percent of the surface is covered with pebbles.  
A1—0 to 5 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 15 percent pebbles; slightly effervescent; mildly alkaline (pH 7.6); clear smooth boundary.  
A2—5 to 10 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; 25 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.  
Bk1—10 to 18 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many fine, medium, and coarse roots; many very fine, fine, and medium tubular pores; 20 percent pebbles, 20 percent cobbles, and 5 percent stones; few fine lime filaments and coatings on rock fragments; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.  
Bk2—18 to 33 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and medium roots; common very fine and fine tubular pores; 20 percent pebbles, 15 percent cobbles, and 5 percent stones; common fine lime filaments, soft masses, and coatings on rock fragments; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary.  
Cr—33 inches; weathered, fractured, calcareous shale.  

Typical Pedon Location  

Soil name and map unit in which located: Xine gravelly loam, 30 to 50 percent slopes, in Attella-Xine-Kram association  
Location in Nevada: Lander County, Nevada, North Part, survey area; about 60 miles southwest of Battle Mountain; in an unsectionalized area about 1,600 feet north and 1.1 mile east of the southeast corner of the assumed sec. 24, T. 25 N., R. 39 E.  

Range in Characteristics  

Soil moisture content: Moist late in fall to early in summer, dry in July through October  
Average annual soil temperature: 44 to 46 degrees F  
Thickness of the molic epipedon: 7 to 14 inches  
Depth to paralithic contact: 20 to 40 inches  
Depth to the calcic horizon: 10 to 25 inches  
Other characteristics: Content of secondary lime increases with increasing depth  

Control section:  
Texture—very cobbly loam or very cobbly sandy loam  
Content of clay—10 to 18 percent  
Content of rock fragments—35 to 60 percent, mainly cobbles  
Calcium carbonate equivalent—25 to 40 percent  

A horizon:  
Value—dominantly 4 or 5 dry and 2 or 3 moist, but in some pedons a thin A1 horizon has value of 6 dry  
Chroma—2 or 3  
Reaction—mildly alkaline or moderately alkaline  

Bk horizon:  
Value—5 to 7 dry, 3 to 5 moist  
Chroma—3 or 4  
Reaction—moderately alkaline or strongly alkaline  

Yobe Series  

Depth class: Very deep  
Drainage class: Somewhat poorly drained  
Parent material: Silty lacustrine sediment derived from various kinds of rock  
Positions on landscape: Alluvial flats  
Slope: 0 to 2 percent  
Mean annual precipitation: About 6 inches  
Mean annual temperature: About 51 degrees F  
Taxonomic class: Fine-silty, mixed (calcareous), mesic Aeric Halaquepts  

Typical Pedon  

A—0 to 2 inches; pale brown (10YR 6/3) silt loam, dark grayish brown (10YR 4/2) moist; weak medium platy
structure; soft, very friable, slightly sticky and slightly plastic; few very fine and coarse roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

C1—2 to 9 inches: pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; few very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

C2—9 to 16 inches: pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; few very fine tubular pores; common firm lime nodules less than 1 millimeter in diameter; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

C3—16 to 24 inches: very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; few very fine tubular pores; common firm lime nodules less than 1 millimeter in diameter; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

C4—24 to 36 inches: very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; few fine distinct brownish yellow (10YR 6/6) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine tubular pores; common firm lime nodules less than 1 millimeter in diameter; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

C5—36 to 60 inches: white (2.5Y 8/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; common medium distinct and prominent brown (7.5YR 4/4), reddish yellow (7.5YR 6/6), and brownish yellow (10YR 6/6) mottles; massive; hard, friable, sticky and plastic; common very fine and fine roots; common fine tubular pores; thin shiny pressure plates on faces of peds; common firm lime nodules 5 to 10 millimeters in diameter; violently effervescent; moderately alkaline (pH 8.4).

**Typical Pedon Location**

**Soil name and map unit in which located:** Yobe silt loam, 0 to 2 percent slopes, in Yobe-Kawich-Playas association

**Location in Nevada:** Lander County, Nevada, South Part, survey area; about 27 miles southeast of Austin; about 1,200 feet north and 500 feet east of the southwest corner of sec. 8, T. 15 N., R. 45 E.

**Range in Characteristics**

**Depth to the seasonal high water table:** 36 to 48 inches

for 1 month or more in most years

**Soil moisture content:** Moist to within at least 30 inches of the surface because of the capillary fringe

**Average annual soil temperature:** 47 to 52 degrees F

**Texture of the control section:** Stratified very fine sandy loam to silty clay loam that is less than 15 percent sand that is coarser textured than very fine sand and 18 to 25 percent clay when mixed

**Exchangeable sodium percentage:** More than 13 (decreases with increasing depth below 20 inches)

**Hue:** 10YR, 2.5Y, or 5Y

**Value:** 6 to 8 dry, 4 to 6 moist

**Chroma:** 2 or 3

**Effervescence:** Strongly effervescent or violently effervescent

**Reaction:** Strongly alkaline or very strongly alkaline in the A horizon, moderately alkaline or strongly alkaline in the C horizon

**Other characteristics:** Very few to common lime nodules in most of the lower part

**Zaidy Series**

**Depth class:** Moderately deep to duripan

**Drainage class:** Well drained

**Parent material:** Alluvium derived from volcanic rock

**Positions on landscape:** Fan piedmont remnants

**Slope:** 2 to 15 percent

**Mean annual precipitation:** About 9 inches

**Mean annual temperature:** About 47 degrees F

**Taxonomic class:** Fine-loamy, mixed, mesic Haploxerollic Durargids

**Typical Pedon**

About 50 percent of the surface is covered with pebbles and 5 percent with cobbles.

**A—**0 to 5 inches; light brownish gray (10YR 6/2) very gravelly fine sandy loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and few very fine roots; common very fine and fine tubular pores; 35 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary.

**Bt—**5 to 8 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; common very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and
slightly plastic; common very fine and fine roots; common fine and medium tubular pores; few thin clay films on faces of ped; 5 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary.

Btk—8 to 14 inches: light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common fine and medium tubular pores; common thin and few moderately thick clay films on faces of ped and lining pores; 20 percent pebbles; few fine soft lime masses; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bqk—14 to 25 inches: very pale brown (10YR 7/4) loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; few fine tubular pores; 10 percent pebbles; 20 percent weak discontinuous silica cementation; common medium soft lime masses and filaments; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Bqkm1—25 to 32 inches: very pale brown (10YR 7/4), continuous, strongly cemented duripan, yellowish brown (10YR 5/4) moist; strong thick platy structure; extremely hard, extremely firm; few fine and very fine roots along horizontal fracture planes; 5 percent pebbles; 20 percent horizontal seams of weakly cemented material; disseminated soft powdery lime; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bqkm2—32 to 60 inches: very pale brown (10YR 7/4), strongly cemented duripan that has a discontinuous thin indurated cap; yellowish brown (10YR 5/4) moist; massive; extremely hard, extremely firm; 10 percent pebbles and 5 percent cobbles; disseminated soft powdery lime; violently effervescent; moderately alkaline (pH 8.2).

**Typical Pedon Location**

*Soil name and map unit in which located:* Zaidy very gravelly fine sandy loam, 8 to 15 percent slopes, in Zaidy-Allor association

*Location in Nevada:* Lander County, Nevada, South Part, survey area; in the southern part of the Grass Valley; about 1,050 feet south and 1,000 feet west of the northeast corner of sec. 11, T. 20 N., R. 45 E.

**Range in Characteristics**

*Soil moisture content:* Usually dry, but moist in some part in mid-October through May

*Average annual soil temperature:* 47 to 50 degrees F

*Depth to the base of the Btk horizon:* 12 to 25 inches

*Depth to carbonates:* 8 to 15 inches

*Depth to the duripan:* 20 to 30 inches

*Reaction:* Mildly alkaline or moderately alkaline

*Control section:*

  *Content of clay:* 25 to 35 percent when mixed
  *Content of rock fragments:* 10 to 35 percent, mainly pebbles

*A horizon:*

  *Value:* 5 or 6 dry, 3 or 4 moist
  *Chroma:* 2 or 3

*Bt horizon:*

  *Value:* 5 or 6 dry, 4 or 5 moist
  *Chroma:* 4 to 6
  *Sodium adsorption ratio:* 6 to 13

**Zineb Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Loamy alluvium that is derived from various kinds of rock and includes some volcanic ash

*Positions on landscape:* Inset fans, fan aprons, fan skirts

*Slope:* 2 to 8 percent

*Mean annual precipitation:* About 8 inches

*Mean annual temperature:* About 46 degrees F

**Taxonomic class:** Loamy-skeletal, mixed, mesic 
Durixerollic Camborthids

*Typical Pedon*

About 20 percent of the surface is covered with pebbles.

*A1—0 to 3 inches:* brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; 10 percent pebbles and 5 percent cobbles; moderately alkaline (pH 8.0); abrupt smooth boundary.

*A2—3 to 5 inches:* pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; very fine tubular pores; 10 percent pebbles and 5 percent cobbles; moderately alkaline (pH 8.0); abrupt smooth boundary.

*Bw—5 to 11 inches:* pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common
fine and medium roots; common very fine tubular pores; 15 percent pebbles and 5 percent cobbles; moderately alkaline (pH 8.0); clear wavy boundary.

**Bq**—11 to 16 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few medium roots; common very fine tubular pores; 30 percent discontinuous weak silica cementation and 5 percent strongly cemented durinodes 5 to 10 millimeters in diameter; 30 percent pebbles and 5 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary.

**Bqk1**—16 to 20 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; 20 percent discontinuous weak silica cementation; 35 percent pebbles and 5 percent cobbles; common medium lime coatings on the underside of rock fragments; noneffervescent in matrix; moderately alkaline (pH 8.4); clear wavy boundary.

**2Bqk2**—20 to 45 inches; pale brown (10YR 6/3) extremely cobbly loamy coarse sand, dark brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common medium roots; common very fine tubular pores; 70 percent discontinuous weak silica cementation; 40 percent pebbles and 25 percent cobbles; many medium lime coatings on the underside of rock fragments; slightly effervescent in matrix; strongly alkaline (pH 8.6); clear wavy boundary.

**3Btbk**—45 to 60 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; hard, firm, slightly sticky and plastic; common fine and medium roots; common very fine tubular pores; few thin clay films on faces of pebbles; 10 percent pebbles; common fine lime filaments and seams; slightly effervescent in matrix; strongly alkaline (pH 9.0).

**Typical Pedon Location**

*Map unit in which located:* Zineb gravelly loam, 2 to 8 percent slopes

*Location in Nevada:* Lander County, Nevada, North Part, survey area; about 33 miles southeast of Battle Mountain; in an unsectionalized area about 600 feet west and 2,400 feet north of the southeast corner of the assumed sec. 33, T. 27 N., R. 47 E.

**Range in Characteristics**

*Soil moisture content:* Moist in winter and spring, dry in June through October

*Average annual soil temperature:* 47 to 52 degrees F

**Depth to carbonates and to the 2Bk horizon:** 16 to 26 inches

**Depth to the Bq horizon:** 10 to 18 inches

**Content of rock fragments in the control section:**

Averages 50 to 75 percent, dominantly pebbles in the upper part and cobbles in the lower part

**Other characteristics:** Strata of unconformable loam below a depth of 40 inches in some pedons

*A horizon:*

Value—5 or 6 dry (value of more than 5.5 occurs when the upper 7 inches is mixed)

*Chroma-*—2 or 3

*Bw horizon:*

Value—3 or 4 moist

*Chroma-*—3 or 4

*Structure—subangular blocky or massive

*Content of rock fragments—*15 to 35 percent, dominantly pebbles

*Texture—gravelly loam or gravelly very fine sandy loam

**Bq horizon:*

*Texture—very gravelly loam or very gravelly sandy loam

*Content of rock fragments—*35 to 60 percent, dominantly pebbles

**Other characteristics—**discontinuous weak silica cementation or durinodes in a friable matrix

**2Bk or 2Bqk horizon:**

*Texture—extremely cobbly sandy loam in the upper part and extremely cobbly loamy coarse sand or extremely cobbly coarse sand in the lower part

**Content of rock fragments—**60 to 80 percent, dominantly cobbles

**Zoesta Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Parent material:* Alluvium and colluvium derived from various kinds of rock

*Positions on landscape:* Summits and side slopes of mountain valley fan remnants, partial baldias, side slopes of mountains

*Slope:* 8 to 30 percent

*Mean annual precipitation:* About 11 inches

*Mean annual temperature:* About 44 degrees F

**Taxonomic class:** Fine, montmorillonitic, frigid Xerollic Paleargids

**Typical Pedon**

About 20 percent of the surface is covered with pebbles and 15 percent with cobbles.
A1—0 to 2 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine vesicular pores; 15 percent pebbles and 15 percent cobbles; neutral (pH 7.2); abrupt smooth boundary.

A2—2 to 7 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; 10 percent pebbles, 15 percent cobbles, and 5 percent stones; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bt1—7 to 12 inches; pale brown (10YR 6/3) cobbly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and medium roots; common very fine and fine tubular pores; few thin clay films coating sand grains; 10 percent pebbles and 15 percent cobbles; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bt2—12 to 18 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong fine and medium prismatic structure; very hard, very firm, very sticky and very plastic; few very fine roots; few fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 5 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary.

Bt3—18 to 23 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong fine prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine roots; few fine tubular pores; common moderately thick clay films on faces of peds and lining pores; 10 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Btk—23 to 31 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/6) moist; strong fine prismatic structure parting to strong fine subangular blocky; very hard, very firm, sticky and plastic; common moderately thick clay films on faces of peds and lining pores; 30 percent pebbles; common fine soft lime masses; slightly effervescent in matrix; moderately alkaline (pH 8.2); gradual wavy boundary.

Bqk—31 to 60 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm, sticky and slightly plastic; 40 percent pebbles; 15 percent strongly cemented durinodes; many coarse soft lime masses; violently effervescent; moderately alkaline (pH 8.4).

Typical Pedon Location

Soil name and map unit in which located: Zoesta cobbly loam, 15 to 30 percent slopes, in Zoesta-Robson-Softscrabble association

Location in Nevada: Lander County, Nevada, South Part, survey area; about 16 miles north of Austin; about 1,900 feet south and 800 feet west of the northeast corner of sec. 1, T. 22 N., R. 44 E.

Range in Characteristics

Soil moisture content: Usually dry, but moist in winter and spring

Average annual soil temperature: 44 to 46 degrees F

Combined thickness of the A and Bt horizons: 30 to 40 inches

Depth to carbonates: 10 to 20 inches

Other characteristics: Effervescence increases with increasing depth, secondary lime occurs in the lower part of the solum

Control section:

Texture—clay loam or clay

Content of clay—35 to 50 percent

Content of rock fragments—less than 15 percent in the upper part and 15 to 35 percent in the lower part, mainly pebbles

A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3

Reaction—neutral or mildly alkaline

Bt horizon:

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 to 6

Structure—strong, fine to coarse, and prismatic

Reaction—mildly alkaline or moderately alkaline

Bqk horizon:

Value—5 or 6 dry, 4 or 5 moist

Chroma—4 to 6

Texture—clay loam or loam

Content of clay—20 to 35 percent

Content of rock fragments—35 to 60 percent, mainly pebbles

Reaction—moderately alkaline or strongly alkaline

Other characteristics—durinodes absent in some pedons

Zoesta Variant

Depth class: Very deep

Drainage class: Well drained
Parent material: Residuum and colluvium derived from chert, quartzite, and extrusive volcanic rock

Positions on landscape: Side slopes of foothills

Slope: 15 to 30 percent

Mean annual precipitation: About 9 inches

Mean annual temperature: About 47 degrees F

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Paleargids

Typical Pedon

About 45 percent of the surface is covered with pebbles and 5 percent with cobbles.

A1—0 to 3 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine vesicular pores; 25 percent pebbles; neutral (pH 7.0); abrupt smooth boundary.

A2—3 to 8 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 3/4) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 15 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bt1—8 to 13 inches; light brown (7.5YR 6/4) gravelly clay loam, dark brown (7.5YR 3/4) moist; strong fine subangular blocky structure; hard, firm, sticky and very plastic; common very fine and fine roots; common very fine tubular pores; common thin clay films on faces of pedds; 20 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary.

2Bt2—13 to 20 inches; light brown (7.5YR 6/4) clay, dark brown (7.5YR 4/4) moist; strong medium prismatic structure parting to strong coarse angular blocky; very hard, very firm, very sticky and very plastic; continuous moderately thick clay films on faces of pedds; 5 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary.

2Bt3—20 to 27 inches; light brown (7.5YR 6/4) clay, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate coarse subangular blocky; very hard, very firm, very sticky and very plastic; few fine roots; few very fine tubular pores; many moderately thick clay films on faces of pedds; moderately alkaline (pH 8.0); clear wavy boundary.

2Bt4—27 to 36 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; common fine black (10YR 2/1) manganese stains; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few fine tubular pores; common thin clay films on faces of pedds; 10 percent pebbles; moderately alkaline (pH 8.0); gradual wavy boundary.

3Bqk—36 to 60 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; common coarse black (10YR 2/1) manganese stains; massive; very hard, firm, slightly sticky and slightly plastic; few very fine tubular pores; 40 percent discontinuous weak silica cementation; 25 percent pebbles; noneffervescent in matrix, common fine strongly effervescent lime seams; moderately alkaline (pH 8.0).

Typical Pedon Location

Soil name and map unit in which located: Zoesta Variant gravelly loam, 15 to 30 percent slopes, in Zoesta Variant-Jung-McVegas association

Location in Nevada: Lander County, Nevada, North Part, survey area; about 37 miles south of Battle Mountain; about 2,300 feet south and 100 feet east of the northwest corner of sec. 2, T. 25 N., R. 45 E.

Range in Characteristics

Soil moisture content: Moist in winter and spring, dry late in June through October

Average annual soil temperature: 47 to 52 degrees F

Combined thickness of the A and Bt horizons: 35 to 45 inches

Depth to the Bqk horizon: 35 to 45 inches

Control section (when mixed):
  Content of clay—45 to 60 percent
  Content of rock fragments—5 to 10 percent

A horizon:
  Hue—7.5YR or 10YR
  Value—5 or 6 dry, 3 to 5 moist
  Chroma—3 to 6

Bt horizon:
  Hue—7.5YR or 10YR
  Value—5 or 6 dry, 3 to 6 moist
  Chroma—3 to 6

Content of clay—55 to 65 percent in the upper part, 35 to 50 percent in the lower part

Bqk horizon:
  Value—6 to 8 dry, 5 or 6 moist
  Chroma—3 to 6

Texture—loam or sandy loam

Content of rock fragments—15 to 35 percent, mainly pebbles

Other characteristics—20 to 50 percent discontinuous weak silica cementation, thin strata of weak continuous cementation in some pedons
Formation of the Soils

Soil is a natural body on the earth’s surface in which plants grow. It is a mixture of rocks, minerals, organic matter, water, and air in varying proportions. The rocks and minerals are fragmented and are partly or wholly weathered. Soils have distinctive layers, or horizons, that are parallel to the soil surface. Soil horizons are the product of environmental forces acting upon material deposited or accumulated through geologic activity.

Soils differ from one another in different localities and within short distances. The differences are the result of the interaction of five soil-forming factors that are known to affect soil formation. These factors are (1) biological forces, mainly the plant cover and the organisms living in and on the soil; (2) climate, mainly the temperature and kind and amount of precipitation that have existed since accumulation of the parent material; (3) relief, mainly as it affects the internal and external soil properties, such as drainage, aeration, susceptibility to erosion, and exposure to sun and wind; (4) parent material, including texture and structure of the material as well as its mineralogic and chemical composition; and (5) the length of time that the soil-forming factors have been operating. These factors form the ecosystem of soil genesis (13).

The soil-forming factors interrelate to develop soil horizons that have specific properties. The age and strength of expression of the horizons is determined by the amount of weathering of the parent material. Weathering is the result of the interaction of moisture, temperature, and biological activity as influenced by time. The kinds and combinations of horizons and other diagnostic properties and their strength of expression provide clues as to the age of the soils in the area (26, 27). Diagnostic horizons present in the soils include mollic epipedons; cambic, argillic, and natic horizons; and silica-cemented horizons.

Mollic epipedons are thick, dark surface horizons that have high base saturation. They form in areas where organic matter accumulates faster than it is oxidized. The organic matter is added to the soil in the form of decomposed roots and organic residue from the surface. When conditions are favorable, mollic epipedons can form in 100 to 1,000 years. They are the only diagnostic horizons in younger soils, but they occur in combination with other diagnostic horizons in older soils.

Cambic horizons in this survey area are identified by a redistribution of soluble salts and carbonates to a lower position in the soil profile, oxidation of the B horizon, and alteration of the original parent material to platy or blocky structure. Cambic horizons in northern and central Nevada generally are thought to be about 5,000 to 10,000 years old. This age has been determined mostly from soil mapping in areas near Lake Lahontan and other Pleistocene lakes (12, 14, 16, 17). Cambic horizons also are present in soils that have a thin layer of Mount Mazama ash in the profile.

Argillic horizons are subsurface horizons that consist of illuvial clay accumulations. Prominent argillic horizons in this area commonly are in soils that formed on surfaces of Wisconsin and pre-Wisconsin age (5, 9, 10, 12, 15, 19, 27). Generally, as argillic horizons age they become finer in texture and somewhat thicker and tend to develop an abrupt upper boundary.

Natic horizons are argillic horizons that have specific physical and chemical properties as a result of a high content of exchangeable sodium. Prominent natic horizons may have developed from argillic horizons that were influenced by the content of sodium in eolian deposits. Transportation and deposition of sodium in eolian deposits have greatly affected the soils in the survey area.

Volcanic glass in deposits derived from pyroclastic material and in eolian deposits is a source of silica that results in the formation of durinodes and duripans in many of the soils in the survey area. Duripans are massive horizons that are cemented with silica and in some areas with accessory calcium carbonate. Soils of the Holocene that developed in deposits that have a high content of volcanic ash commonly have weakly to moderately cemented horizons that contain a large amount of amorphous siliceous material. This silica cementation can form in a relatively short period of time and is probably less than 7,000 years old. Platy, or laminated, duripans and thin, discontinuous, laminar duripans tend to develop in loamy material. Duripans
capped with silica-cemented laminar layers probably are the oldest ones in the area and are of early Wisconsin to pre-Wisconsin age, as evidenced by their association with prominent argillic horizons.

The overall landscape of the area, which is mainly mountains and valleys, is the result of geologic stratigraphic and structural control. The present topography and landforms, however, primarily are the result of events that occurred during the Quaternary. The kinds of soils that formed are indicative of the stability and age of the surfaces of the landforms on which they occur. The degree of development of diagnostic horizons in the soils indicates a range in age from Holocene to pre-Wisconsin. The many kinds of soils in the area are a direct result of this range in age.

**Biological Forces**

Plants, animals, insects, and microflora are important biological forces that affect soil formation in this survey area. Although mammals, such as badgers and ground squirrels, and insects, such as cicadas and ants, have had some effect on soil development, plants appear to have had a major influence.

The vegetation in the area has been particularly important in stabilizing the land surfaces so that soil formation can occur. Plants provide stability by protecting the surface from erosion, and their roots help to develop soil structure and aggregate stability.

Because of climatic differences, the plant community varies considerably as elevation increases. On the flood plains, where drainage is restricted, the dense meadow vegetation has supplied the organic matter necessary for the development of Fluvaquentic Haplaquolls (Paranaic series), which have a dark A horizon.

On fan piedmonts, fan skirts, alluvial flats, and lake plains at the lower elevations, the dominant plants are drought- and salt-tolerant shrubs (22). Because of the scarcity of available moisture, the plant cover in these areas is sparse. As a result, little organic matter is added to the soils and little protection from the wind and sun is provided. Salts have been moved from the lower layers to the upper layer by the salt-tolerant shrubs. Examples of soils that formed in these areas are Duric Natrargids (Beoska series) on fan piedmonts and Aeric Halaquepts (Ocala series) on alluvial flats.

Fan piedmonts, fan skirts, and foothills at the higher elevations support a plant cover of shrubs and grasses. The density of these plants is somewhat greater; therefore, moderate amounts of organic matter have accumulated in the A horizon. Soluble salts are present at a greater depth in the profile. Examples of soils that formed in these areas are Durixerollic Haplargids (Pineval series) on fan piedmonts and Xerollic Haplargids (Trunk series) on foothills.

The mountainous areas support denser stands that include shrubs, grasses, and some trees. Because the vegetation is abundant, the A horizon in these soils is thick, dark, and high in organic matter content. An example of soils in these areas is Aridic Argixerolls (Reluctan series).

**Climate**

The major climatic forces that influence soil formation are precipitation and temperature. Recent soils developed under the present climate, but soils that developed before the Holocene were subject to different climatic conditions. Morrison and Frye (16, 17, 18, 19) suggest that accelerated soil formation occurs during unique climatic periods, but the climatic conditions between these periods is not conducive to soil formation.

The present desert climate began at the start of the Pleistocene (4), but both precipitation and temperature have fluctuated greatly. The present climate is characterized by warm, dry summers and cool, moist winters. Precipitation is strongly influenced by the north-south trending mountain ranges, and it generally increases as elevation increases. The average annual precipitation ranges from about 6 inches at the lowest elevations in the Antelope, Big Smoky, and Crescent Valleys to about 16 inches or more at the highest elevations in the Toiyabe Range. Most of the precipitation falls in winter and spring.

The average annual air temperature ranges from about 50 degrees F at the lower elevations in the eastern valleys to about 41 degrees or less in some of the higher mountain ranges. In winter freezing and thawing generally occur throughout the survey area, except in those areas that are insulated by snow cover. This frost action causes heaving of plants, development of miniature rings and rock stripes, and erosion as a result of solifluction. At some of the higher elevations, bedrock has been fractured and displaced as a result of freezing and thawing.

Major climatic variations are a result of the effects of topography and relief. Temperature decreases and precipitation increases as elevation increases. The soils in the survey area generally are divided into climatic zones according to elevation and longitudinal location. As the precipitation increases, the removal of soluble salts and the production of native vegetation increase, which results in a cycling of bases and an increase in organic matter. Fluctuations in temperature and moisture affect the rates of organic matter accumulation and decomposition and the rate of weathering of minerals (6, 13).
At elevations of 5,000 to 5,300 feet, the average annual precipitation is about 6 to 8 inches and the average annual air temperature is about 48 to 50 degrees. In these warm, arid areas, no surplus soil moisture is available to percolate. Chemical weathering of parent material is slow, soluble salts remain in the upper part of the soil profile, and eluviation and illuviation occur very slowly. The plant cover is sparse and consists mainly of drought- and salt-tolerant shrubs. Typically, the soils are low in organic matter content and have a thin, light-colored A horizon. Soluble salts, calcium carbonate, and silica accumulate in the soil profile at a relatively shallow depth. Duric Camborthids (Broyles series) and Duric Natargids (Beoska series) are examples of soils that formed in this climatic zone.

At elevations of 5,300 to 6,500 feet, the average annual precipitation is about 10 inches and the average annual air temperature is about 47 degrees. In these warm, semiarid areas, the plant cover is thicker than at the lower elevations and consists mainly of drought-tolerant shrubs and grasses. Chemical weathering of parent material occurs slowly. Typically, weathering products are moved down below the root zone, and calcium carbonate and silica accumulate in the lower part of the profile. Soluble salts are completely removed or are concentrated deep in the profile. Typically, the soils are moderately low in organic matter content. They have a thin, relatively dark A horizon or a thicker, light-colored A horizon and a thicker cambic or argillic horizon over accumulations of silica or carbonates. Durixerollic Camborthids (Orovada series) in valleys and Lithic Xerollic Haplargids (Punchbowl series) on foothills are examples of soils that formed in this climatic zone.

At elevations of 6,500 to 8,000 feet, the average annual precipitation is about 12 to 14 inches and the average annual air temperature is about 43 to 46 degrees. In these cool, semiarid areas, the increased precipitation and decreased evapotranspiration rate result in a dense plant cover consisting mainly of shrubs and perennial grasses and localized stands of singleleaf pinyon and Utah juniper. Because of the lower temperatures, organic matter decomposes at a slower rate and accumulates in the A horizon. Chemical weathering is moderate in this climatic zone, soluble salts and calcium carbonate are completely removed from the soil profile, and eluviation and illuviation commonly occur at a moderate rate. Typically, the soils have a thick, dark mollic epipedon and a weak B horizon. Aridic Haploxeroolls (Loncan series) and Aridic Argixerolls (Sumine series) are examples of soils that formed in this climatic zone.

At elevations of as much as 10,200 feet, the average annual precipitation is about 14 to more than 16 inches and the average annual air temperature is about 41 to 43 degrees. These cold areas are mainly on windswept crests and side slopes of mountains, in sheltered areas where snow accumulates, and on back slopes of mountains, where drifted snow accumulates. All soluble salts and calcium carbonate and some exchangeable cations have been removed from the soil profile, resulting in a base saturation that generally is lower than in other climatic zones. Organic matter decomposes slowly, and a thick, dark A horizon forms. Areas where drifted snow accumulates support thick mountain shrubs and grasses. Windswept areas receive less effective precipitation, which is reflected in lower plant production. Soils on stable, north-facing, concave back slopes in areas where snow accumulates may be older than their degree of development indicates because they remain cold for most of the year, which inhibits development. During glacial periods these soils may have remained frozen or under snow cover throughout the year. Pachic Cryoborolls (Hapgood series) on back slopes of mountains and Argic Cryoborolls (Packer series) on windswept crests of mountains are examples of soils that formed in this climatic zone.

Time

Time is required for the weathering of rocks and minerals and the formation of soil horizons. The interaction of time and other soil-forming factors is not well understood by soil scientists and geologists working in this field. Some suggest that the weathering of parent material and the development of soil profiles essentially have been continuous and at a constant rate throughout the Quaternary (20, 21, 24, 29). Recently, however, geologists concerned with differentiating Quaternary deposits have suggested that soil development has not proceeded continuously at the same rate but has taken place intermittently at rapid rates (16, 17, 18, 23).

The present desert climate began at the start of the Pleistocene (4), but precipitation and temperature have fluctuated greatly. During cooler and wetter glacial periods, or pluvials, the rate of runoff increased, resulting in increased erosion, mass wasting, and deposition. These conditions reduced the rate of evaporation in the basins, and permanent lakes developed on the bolson floors. A change to a cool, drier climate at the beginning of the interglacial periods commonly was marked by maximum eolian activity. Following this was a warm, dry period and then a warm, wet period, which was most conducive to soil development (3, 5, 17). These periods of peak soil development occurred worldwide; therefore, the profiles
of soils that formed in different regions during these periods can be correlated and are similar in age.

The peak soil-forming periods generally followed periods of increased erosion and deposition. During these periods, the land surfaces stabilized and the climate was favorable for a greatly accelerated rate of chemical weathering. Geologists have developed a technique of mapping soils called soil stratigraphy that uses weathering profiles to differentiate and correlate Quaternary deposits. Researchers have found soils in other parts of Nevada that are similar in age to those that formed on stratigraphic surfaces identified by Morrison (5, 12, 15). Comparing soils in this survey area with similar soils in other areas has helped to identify local soils that are similar in age. Although soils developed during each peak soil-forming period, representative profiles have eroded away or have been covered by subsequent depositions in some areas. Because of this, gaps occur in the time-soil profile sequence. In the following paragraphs, some of the time-stratigraphic ages as set forth by Birkeland are discussed (6). These include the Holocene, Wisconsin, and pre-Wisconsin ages.

Holocene.—Volcanic ash and eolian material, presumed to be from Mount Mazama ashfalls, are the main sources of soluble silica that forms durinodes and duripans in the soils in the survey area. Thin strata of this material are in some of the soils on fan skirts, alluvial flats, and flood plains (7).

Hawley and Wilson (12) proposed that a distinct Mount Mazama volcanic ash bed (7) along the Humboldt River overlies late Wisconsin deposits and is the boundary between the Pleistocene and Recent soils in the Winnemucca area. This widely spread volcanic ash bed extends into northern Lander County and is interbedded with flood plain deposits along the Humboldt River and with young alluvium on fan skirts in the lower part of the Antelope Valley. Mifflin and Wheat (14) proposed that the Pleistocene shorelines in Buffalo Valley near Battle Mountain and in the Grass Valley can be correlated with that of ancient Lake Lahontan (late Wisconsin). After the lakes receded, Durorhloic Torriorthents (Bubus series) and Aquic Durorhloic Torriorthents (Gund series) formed on these geomorphic surfaces. Many of these soils are still subject to aggradation. These soils and those exhibiting less soil development are considered to be of the Holocene.

The youngest soils in the area are those that formed in recently aggraded material or in material recently exposed by erosion. These soils have no diagnostic horizons, and they resemble the original parent material. Among these are Aquic Torriorthents (Needle Peak series) and Typic Torriorthents (Fenster series) that formed in recent alluvium, Typic Torriorthents (Isolde series) that are subject to eolian activity and are on semistabilized sand dunes and dunes superimposed over beach plains, and Lithic Xeric Torriorthents (Tessive series) and shallow Xeric Torriorthents (Puett series) that formed in material weathered from Tertiary sediment on low, rolling hills where geologic erosion has been active.

Somewhat older are soils that formed in alluvium on axial-stream flood plains, slowly aggrading inset fans, and relatively recently eroded mountain slopes. These soils have been stable long enough to accumulate organic matter and form a mollic epipedon. They do not have a cambic, argillic, natric, or calcic horizon, a duripan, or durinodes. They are probably less than about 1,000 years old. Examples of these soils are Fluvaquentic Haplaquolls (Paranat series) on axial-stream flood plains, Cumulic Haplaquolls (Welch series) on inset fans in narrow mountain valleys, and Aridic Haploxerolls (Loncan series) and Lithic Haploxerolls (Gando series) on mountain slopes.

Soils that formed in alluvium and have subsurface horizons that contain durinodes or are weakly cemented with silica are also older than the youngest soils in the area and possibly are slightly older than the soils that have a dark A horizon as their only diagnostic feature. These soils formed in salt- and sodium-affected parent material that contains appreciable amounts of volcanic ash. They are on lake plains, alluvial flats, and alluvial-flat remnants. The content of soluble silica in the volcanic ash and the alkalinity and fluctuating water table probably contributed to the relatively rapid formation of durinodes and incipient silica cementation. Examples of these soils are Aquic Durorhloic Torriorthents (Gund series) on lake plains, Aerio Halaquests (Ocala series) on alluvial flats, and Durorhloic Torriorthents (Bubus series) on alluvial-flat remnants.

Stable Holocene land surfaces that are 2,000 to 8,000 years old are extensive in the survey area (8, 9). The soils that formed on these surfaces have a cambic horizon and are cemented with silica in some areas. These soils are on fan skirts, offshore bars, lagoons, and foothills. Examples are Xerollic Camborthids (McConnel series) on offshore bars, Duric Camborthids (Creemon series) in lagoons, and Xerollic Camborthids (Minat series) on foothills.

The landscape in some areas is less stable and was stripped by erosion during the late Wisconsin period, exposing a relict duripan. Following redeposition during the mid to early Holocene, thin layers of loess and loamy alluvium from surrounding areas covered these relict subsurface horizons. Soil development in this material is minimal. Xerollic Durorthids (Chiara series)
on fan piedmonts and Typic Durorthids (Osoll series) on foothills are examples of soils that developed in this material.

Wisconsin.—Deposits of Wisconsin age are widely distributed in the survey area. Early Wisconsin deposits on fan and stream terraces generally are more extensive and coarser than those of the late Wisconsin and early Holocene. A widespread veneer of loess covered these coarse deposits during the mid-Wisconsin. Typically, these deposits are on the higher geomorphic surfaces and are dissected. Morrison (18) proposed that a weathering profile, the Churchill soil in the Lake Lahontan area, be used to differentiate early Wisconsin from late Wisconsin deposits. Hawley and Wilson (12) tentatively correlated a soil of similar age in the Winnemucca area. Soils in this survey area that consist of loess-influenced alluvium over coarse alluvium have characteristics similar to those of the soils correlated in the Winnemucca area. An example of these soils is Duric Natrrargids (Beoska series). They are considered to be mid-Wisconsin age.

About half of the soil series in the survey area are late Wisconsin to pre-Wisconsin age. These soils are mainly on mountains, plateaus, foothills, and fan piedmonts. Because extensive areas of these soils are present, it is evident that excessive erosion and deposition have not taken place since the late Pleistocene, when the climate stabilized.

Stable late Wisconsin or early Holocene land surfaces are not believed to be extensive in this survey area. Soils that formed on these surfaces have a thin or weak argilllic horizon. An example is Xerolic Haplargids (Genaw series), which are on low, rolling hills. These soils have a thin, medium textured argilllic horizon underlain by soft bedrock at a depth of less than 20 inches.

Stable mid-Wisconsin land surfaces are extensive in this survey area. The soils on these surfaces have a dominantly fine-loamy or loamy-skeletal argilllic or natric horizon. Durixerollic Haplargids (Allor series) on fan piedmonts are examples of soils that have an argilllic horizon, Duric Natrrargids (Ricert series) on fan piedmonts are examples of soils that have a natric horizon, Lithic Xerolic Haplargids (Old Camp series) on foothills are examples of soils that have an argilllic horizon, and Aridic Argixerolls (Reluctan series) and Typic Argixerolls (Clanalpine series) are examples of soils on mountain slopes.

Stable early Wisconsin land surfaces are extensive in this area. These soils have a well developed argilllic horizon. They are on the older land surfaces where the original subsurface horizons have not been eroded or deeply buried by sediment. Haplixerollic Nadurargids (Filiran series), which have a thick natric horizon and a thick duripan, are examples of these soils on fan piedmonts. Xerolic Haplargids (Roca series), which have a clayey-skeletal argilllic horizon and formed in residuum, are examples of these soils on foothills. Aridic Argixerolls (Chad and Waiti series), which have a clayey argilllic horizon and formed in residuum, are examples of these soils on mountain slopes.

Pre-Wisconsin.—These alluvial deposits are limited in the survey area. Two pre-Wisconsin deposits are recognized by Morrison (18)—one that is similar to soils of the Kansan Glaciation (pre-Cocoon soils) and a younger one that is somewhat less dissected, is at somewhat lower elevations, and is similar to soils of the Illinois Glaciation (Cocoon soils). Examples of soils in this survey area that are similar to these soils in age are those of the Kingingham and Wieland series, respectively.

Stable pre-Wisconsin land surfaces are moderately extensive in this area. These surfaces have been deeply dissected and are on fan piedmont remnants and partial ballenas bordering mountain slopes. Because these surfaces have been relatively stable since they were dissected, the soils that developed on them are considered to be the oldest in the survey area. Xerollic Durargids (Buffaran series) and Aridic Durixerolls (Stampede series) are examples of soils on fan piedmont remnants. These soils generally have a thick, clayey argilllic horizon and a thick duripan. Xerolic Paleargids (Zoesta series), which have a thick argilllic horizon that is 45 to 60 percent clay, are examples of soils that formed on partial ballenas.

Relief

Relief is the shape of the landscape. It is determined by the position of the water table, percent of slope, length of slope, shape of slope (convex or concave), and exposure to wind and sun. Any activity on a slope that affects the soil, including erosion and deposition, affects soil formation (13).

The landscapes in this survey area are dominated by subparallel mountain ranges rising abruptly from broad alluvium-filled valleys. Fan piedmonts and fan skirts slope downward from the mountains until they merge with alluvial flats and into central playas or axial-stream flood plains (22).

The mountain ranges mainly are characterized by excessive relief. The soils in these positions are well drained. Runoff is rapid or very rapid, and the hazard of erosion is severe. Mountain slopes that are only partially stabilized are subject to a high rate of geologic erosion, and soil development on these slopes primarily is limited to an accumulation of organic matter that forms a mollic epipedon. Lithic Haploxerolls (Gando
series) and Lithic Xeric Torriorthents (Attella series) are examples of soils on these slopes. Soil formation has been unable to act on parent material long enough for a cambic or argillic horizon to form in these soils. Mountain slopes that are more stable are subject to a slower rate of geologic erosion, and an argillic horizon has formed in the soils on these slopes. Xerolic Haplargids (Trunk series) and Aridic Argixerolls (Sumine series) are examples.

Most of the foothills and mountains exhibit pronounced aspect-related differences in microclimate. Some soils on steep, north-facing slopes at the lower elevations are similar to soils on all aspects at the higher elevations, and some soils on steep, south-facing slopes at the higher elevations are similar to soils at the lower elevations (6, 13).

Fan piedmonts flank the mountain ranges. The soils in these positions are well drained. Runoff is slow or medium, and the hazard of erosion is slight or moderate. The fan piedmonts typically are dissected because the stream channel has been altered as a result of changes in climate or local faulting. This dissection has resulted in the formation of smooth areas on the summits of fan piedmont remnants, younger side slopes of fan piedmont remnants, and very young inset fans along drainageways. Duric Natargids (Oxcoel series) and Haploxerolic Durargids (Novacan series) are examples of soils on the summits of fan piedmont remnants. Durixerolic Camborthids (Orovada series) are examples of soils on the side slopes of fan piedmont remnants, and Typic Torriorthents (Fenster series) are examples of soils on inset fans.

Fan skirts are extensive in this area. They border the fan piedmonts and extend to the alluvial flats. The soils in these positions are well drained. Runoff is slow or medium, and the hazard of erosion is slight or moderate. These surfaces are relatively smooth and are not dissected. Durixerolic Camborthids (Rasilie series), Typic Camborthids (Whirlo series), and Duric Camborthids (Broyles series) are examples of soils on fan skirts.

Remnants of flood plains, alluvial flats, and lake plains originally had a high water table and were flooded. The fluctuating water table combined with the high content of volcanic ash and the alkalinity of the parent material produced horizons that have firm durinodes or are cemented with silica. As the streams slowly downcut the flood plains and the lakes receded in the bozons, subtle dissection took place. This dissection left stable flood-plain, alluvial-flat, and lake-plain remnants that had water tables at a lower depth and were subject to little or no flooding. The soils in these positions are moderately well drained or well drained. Runoff is slow, and the hazard of erosion is slight. These soils contain soluble salts. Durorthic Torriorthents (Bubus series) are examples of soils on alluvial-flat and lake-plain remnants.

The soils on alluvial flats and lake plains are somewhat poorly drained. Runoff is slow, and the hazard of erosion is slight. These soils have horizons that are cemented with silica to various degrees. The soils are light colored, and they contain soluble salts. Aeric Halaquepts (Umberland and Ocala series) are examples of soils in these areas.

The soils on the nearly level axial-stream flood plains along the Reese River are poorly drained or very poorly drained. Runoff is very slow. Most areas of these soils are subject to flooding, and some areas are subject to deposition. The soils in these areas support dense stands of meadow vegetation that contributes large amounts of organic matter; thus, these soils have a thin to thick, dark A horizon. Some of these soils have excess soluble salts in the upper horizons. Fluvuquent Haplaquolls (Paranat series) and Aeric Fluvuquents (Sonoma series) are examples of soils in these positions.

Parent Material

Parent material is the weathered rock or unconsolidated material from which soils form. The hardness, grain size, and porosity of the parent material and its mineralogic and chemical composition greatly influence soil formation. The parent material in this survey area is mainly material derived from sedimentary rock and associated metamorphic rock, material derived from intrusive and extrusive volcanic rock, and colluvium, alluvium, lacustrine sediment, and eolian material.

The sedimentary rock in the area includes shale, chert, conglomerate, and breccia and localized areas of limestone and dolostone. The soils in the New Pass and Toiyabe Ranges and the Desatoya, Shooshone, and Simpson Park Mountains formed in material derived from sedimentary rock. Most of the material contains minerals that weather to clay. The soils that formed on stable landscapes have an argillic horizon. Lithic Argixerolls (Itca series) and Aridic Argixerolls (Walti series) are examples of these soils. In some areas the soils have not been stable long enough for an argillic horizon to form. Aridic Haploxerolls (Loncan series) and Lithic Xeric Torriorthents (Attella series) are examples of these soils.

Late Tertiary sedimentary rock occurs primarily along the ancient alluvial divides between the Reese River, Carico Lake, and Grass Valleys. This material consists of older alluvium and lakebed deposits derived from interbedded tuffaceous shale, diatomaceous shale,
siltstone, sandstone, and conglomerate. The older alluvium has remained stable for long periods and contains rock fragments and minerals that weather to clay. Typic Haplargids (Spike series) are examples of soils on older, stable surfaces that have an argillic horizon. The lakebed deposits are severely dissected and resemble low, rolling hills. The summits have been stable for short periods of time, and the side slopes are actively eroding and are too unstable for an argillic horizon to form. Xerollic Haplargids (Genaw series) are examples of soils on the stable summits. Xeric Torriorthents (Puett series) and Typic Torriorthents (Perlor series) are examples of shallow, weakly developed soils on the unstable side slopes.

The volcanic rock in the area includes andesite, rhyolite, ashflow tuff, basalt, and small, localized areas of granite. The soils in parts of the New Pass Range, the Grondine and Simpson Park Mountains, and the Toiyabe Range derived from volcanic rock. This rock contains large amounts of minerals that weather to clay; therefore, most of the soils that formed in this material on stable landforms have an argillic horizon. Lithic Argixerolls (Nilisum series) and Xerollic Haplargids (Bucan series) are examples.

The colluvium, alluvium, and basin fill material in adjacent valleys are derived mainly from sedimentary and volcanic rock. The soils in the valleys throughout the area are strongly influenced by pyroclastic material from this rock. Those derived from the more siliceous rock, particularly chert and tuff, have layers of silica cementation.

Colluvium has accumulated on steep mountain slopes as a result of gravitational forces and mass wasting. The colluvium generally is poorly sorted, contains many rock fragments, and includes minerals that weather to clay. Many of these areas have not been stable long enough for an argillic horizon to form. Xerollic Camborthids (Minat series) are examples of soils that formed in colluvium on steep mountain slopes.

Alluvium derived from various kinds of rock and deposited as fan piedmonts is mostly loamy and contains pebbles, cobbles, and stones. It is porous, contains minerals that weather to clay, and contains soluble silica that results in the cementation of horizons. Haploxerollic Nadurargids (Filiar series) and Xerollic Durargids (Buffaran series) are examples of soils that formed on stable fan piedmonts. These soils have an argillic horizon and a duripan.

Alluvium deposited as fan skirts below the fan piedmonts consists of loamy and silty material mixed with loess that is high in content of volcanic ash. Some localized areas along drainageways contain pebbles, cobbles, and stones. The soils in these areas typically have horizons that are cemented with silica. Examples of soils that formed on fan skirts are Durorthid Torriorthents (Misad series) and Duric Camborthids (Ralley series).

Alluvium deposited as alluvial flats and flood plains below the fan skirts consists of silty and clayey material. Soluble salts are common in some of the soils in these areas. Although this material contains minerals that can be weathered, the soils are young and exhibit limited soil development. Aeric Halaequepts (Ocala series) and Fluvaquentic Haplaquolls (Paranat series) are examples.

Sandy eolian material is of limited extent in this survey area. It occurs mainly in the Grass Valley. Typic Torripsamments (Isolde series), which formed in wind-active areas on semistabilized dunes and on dunes superimposed over beach plains, are examples of soils that formed in this material.
References


Glossary

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases) that plant growth is restricted. The degrees of alkalinity (sodicity) are expressed as an exchangeable sodium percentage. They are:

- Nonalkali.............................. less than 15
- Slightly alkali.......................... 15 to 40
- Strongly alkali........................ more than 40

Alkaline soil. A soil having so a high degree of alkalinity (pH 8.5 or higher) that plant growth is restricted.

Alluvial fan. A semiconical, or fan-shaped, constructional, major landform that is mainly stratified alluvium with debris flow deposits in some areas. It is on the upper margin of a piedmont slope, and its apex is a source of alluvium debouching from a mountain valley into an intermontane basin. Also, a generic term for similar landforms in various other landscape positions.

Alluvial flat. The nearly level alluvial surface between a piedmont slope and the playa of a bolson or the axial-stream flood plain of a semibolson. This landform can include both recent and relict components.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal-unit-month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Area reclaim (as a restrictive feature). An area difficult to reclaim after the removal of soil for construction and other uses.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Back slope. The slope component that is the steepest, straight to concave or merely concave middle portion of an erosional slope.

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Ballena. A major landform comprised of distinctively round-topped ridgeline remnants of fan alluvium. The broadly rounded shoulder slopes of the ridge meet from either side to form a narrow crest and merge smoothly with the concave back slopes. In ideal examples, the slightly concave foot slopes of adjacent ballenas merge to form a smoothly rounded drainageway.

Bar (offshore and barrier). A component landform comprised of elongated, commonly curving, low ridges of well sorted sand and gravel that stand above the general level of a bolson floor. It is the result of the wave action of a Pleistocene lake.

Basal area. The area of a cross section of a tree. It is a measure of stand density, commonly expressed in square feet. For pinyon pine and juniper stands, it is the section at a height of 1 foot and measured outside the bark.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Basin. A general term for an intermontane basin, a bolson, a semibolson, an area of centripetal
drainage, or a structural depressional area.

**Basin floor.** The lowermost, nearly level major physiographic part of a bolson or semibolson. It includes all alluvial, eolian, and erosional landforms that are below the piedmont slopes.

**Basin-floor remnant.** A generally flat-topped erosional remnant of a basin floor that has been dissected by an axial stream.

**Beach plain.** A major landform of bolson floors comprised of numerous, closely spaced offshore bars and intervening lagoons. It is the result of a receding Pleistocene lake.

**Beach terrace.** A component landform that is on the lower piedmont slope. It consists of a wavecut scarp and wavebuilt terrace of well sorted sand and gravel marking a still-stand of a Pleistocene lake.

**Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

**Bolson.** An internally drained intermontane basin.

**Bolson floor.** The specific identification of the floor of a bolson, as compared with the floor of a semibolson; both are basin floors.

**Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.

**Brush management.** Use of mechanical, chemical, or biological methods to reduce or eliminate competition of woody vegetation to allow understory grasses and forbs to recover or to make conditions favorable for reseeding. It increases production of forage, which reduces the hazard of erosion. Brush management may improve the habitat for some species of wildlife.

**Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

**Canopy.** The leafy crown of trees or shrubs. (See Crown.)

**Cemented pan (as a restrictive feature).** A cemented pan is too close to the surface for the specified use.

**Channel.** The bed of a single or braided waterway that commonly is barren of vegetation. Channels form in young alluvium. They may be enclosed by banks, or they may be splayed across a fan surface and slightly mounded above it. They may include bars and dumps of cobbles and stones. Channels, except flood-plain playas, are landform elements.

**Chemical treatment.** Control of unwanted vegetation by use of chemicals.

**Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

**Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

**Coarse textured soil.** Sand or loamy sand.

**Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

**Cobbly soil material.** Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material is 35 to 60 percent of these rock fragments, and extremely cobbly soil material is more than 60 percent.

**Colluvium.** Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

**Complex soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

**Component landform.** A feature of the earth’s surface that is part of a major landform and was created by partial dissection of the major landform or by alluvial or eolian accretion. A component landform is the smallest type of landform that can be described as a single unit. Its morphological parts are called landform elements. A side slope element can be subdivided into slope components.

**Conglomerate.** A coarse grained, clastic rock composed of rounded to subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer material. Conglomerate is the consolidated equivalent of gravel.

**Conservation cropping system.** Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.
Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—
Loose.—Noncoherent when dry or moist; does not hold together in a mass.
Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.
Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.
Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.
Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.
Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
Soft.—When dry, breaks into powder or individual grains under very slight pressure.
Cemented.—Hard; little affected by moistening.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coppice dune. A small dune of fine grained soil material stabilized around shrubs or small trees.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crest. The slope component comprising a very narrow, commonly linear top of an erosional ridge, hill, mountain, or other landform.

Crop residue management. Returning crop residue to the soil. Crop residue management helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system. Growing crops using a planned system of rotation and management practices.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cutbanks cave (as a restrictive feature). The walls of excavations tend to cave in or slough.

Decreaser. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deep to water (as a restrictive feature). The soil is deep to a permanent water table during dry periods.

Deferred grazing. Postponing or arresting grazing for a prescribed period.

Depth (soil depth). Depth to a restricting layer is measured from the soil surface. The restricting layer is either a duripan (strongly cemented or indurated) or consolidated bedrock (soft or hard). The depth classes used in this survey are—

- Very shallow .......... less than 10 inches
- Shallow ................ 10 to 20 inches
- Moderately deep .......... 20 to 40 inches
- Deep .................... 40 to 60 inches
- Very deep ............. more than 60 inches

Depth to rock (as a restrictive feature). Bedrock is too near the surface for the specified use.

Desert pavement. A layer of gravel or coarser fragments on a desert soil surface that was emplaced by the upward movement of fragments from underlying sediment or that remains after finer particles have been removed by running water or wind.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

- Excessively drained.—These soils have very high and high hydraulic conductivity and low water-holding capacity. They are not suited to crop production unless irrigated.
- Somewhat excessively drained.—These soils have high hydraulic conductivity and low water-holding capacity. Without irrigation, only a narrow range of crops can be grown and yields are low.
- Well drained.—These soils have intermediate water-holding capacity. They retain optimum amounts of moisture, but they are not wet close enough to the surface or long enough during the growing season to adversely affect yields.
- Moderately well drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or yields of some field crops are adversely affected unless artificial drainage is provided. Moderately well drained soils commonly have a layer with low hydraulic conductivity, a wet layer relatively high in the profile, additions of water by seepage, or some combination of these.
- Somewhat poorly drained.—These soils are wet
close enough to the surface or long enough that planting or harvesting operations or crop growth is markedly restricted unless artificial drainage is provided. Somewhat poorly drained soils commonly have a layer with low hydraulic conductivity, a wet layer high in the profile, additions of water through seepage, or a combination of these.

Poorly drained.—These soils commonly are so wet at or near the surface during a considerable part of the year that field crops cannot be grown under natural conditions. Poorly drained conditions are caused by a saturated zone, a layer with low hydraulic conductivity, seepage, or a combination of these.

Very poorly drained.—These soils are wet to the surface most of the time. They are wet enough to prevent the growth of important crops (except rice) unless artificially drained.

Drainage, surface. Runoff, or surface flow of water, from an area.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Droughty (as a restrictive feature). The soil holds too little water for plants during dry periods.

Duff. A term used to identify a generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Effervescence. A soil quality measured when drops of diluted (1:10) hydrochloric acid (HCl) are added to the soil. The ratings are as follows:

- Very slightly effervescent ............ few bubbles
- Slightly effervescent .................. bubbles readily
- Strongly effervescent .............. bubbles form low foam
- Violently effervescent ....... bubbles form thick foam quickly

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream or reach of a stream that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Erodes easily (as a restrictive feature). Water erodes the soil easily.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep. Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

Escarpmant. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and produced by erosion or faulting. Synonym: scarp.

Excess fines (as a restrictive feature). Excess silt and clay are in the soil. The soil does not provide a source of gravel or sand for use in construction.

Excess salt (as a restrictive feature). The soil has excess water-soluble salts that restrict the growth of most plants.

Excess sodium (as a restrictive feature). The soil has excess exchangeable sodium that restricts the growth of plants.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fan apron. A component landform consisting of a sheetlike mantle of relatively young alluvium that partially covers the surface of an older fan piedmont or, in some places, an alluvial fan. A fan apron buries a pedogenic soil.

Fanlet. A very small, normally undissected alluvial fan, something less than a few tenths of a square mile in area, that may occur below a gully, inset fan, or ravine in a variety of positions on the piedmont slope or within mountain valleys.

Fan piedmont. The most extensive major landform of most piedmont slopes. It is formed by the lateral coalescence of mountain-front alluvial fans into one generally smooth slope and by accretion of fan aprons. Fan piedmonts commonly are complexes of many component landforms.

Fan remnant. A generic term for a component landform that is the remainder of various older fans that
have been dissected (erosional fan remnants) or partially buried (nonburied fan remnants).
Erosional fan remnants have a flattish summit that consists of a relict fan surface; nonburied fan
remnants consist entirely of a relict fan surface.
Fan remnants may also be specifically identified,
for example, fan-piedmont remnants, fan-skirt
remnants, or inset-fan remnants.

**Fan-remnant side slope.** A landform element
comprised of the relatively young erosional slope
around the sides of an erosional fan remnant. It is
composed of shoulder slopes, back slopes, and
foot slopes.

**Fan skirt.** A major landform comprised of laterally
coalescing, small alluvial fans that originate from
gullies that are cut into or that extend from inset
fans of a fan piedmont and merge along their toe
slopes with the basin floor. Fan skirts are smooth
or only slightly dissected.

**Fine textured soil.** Sandy clay, silty clay, and clay.

**Flood (as a restrictive feature).** The soil is flooded
by moving water from stream overflow, runoff, or
high tides.

**Flood plain.** The transversely level floor of an axial
stream of a semibolson or of a major desert
stream valley that is occasionally or regularly
alluviated by the stream overflowing its channel
during periods of flooding.

**Flood-plain playa.** A component landform consisting of
very low gradient, barren, axial stream segments
in an intermontane basin. It is subject to broad and
shallow floods and is veneered with barren, fine
textured sediment that crusts. A flood-plain playa
commonly is segmented by transverse, narrow
bands of vegetation, and it may alternate with
ordinary, narrow or braided channel segments.

**Foothill.** A steeply sloping upland that has relief of as
much as 1,000 feet (300 meters) and fringes a
mountain range or high-plateau escarpment.

**Foot slope.** The relatively gently sloping, slightly
concave slope component of an erosional slope
that is at the base of the back slope component.

**Forb.** Any herbaceous plant not a grass or a sedge.

**Frost action (as a restrictive feature).** The moisture in
the soil freezes and thaws. Frost action can
damage roads, buildings, and other structures.

**Genesis, soil.** The mode of origin of the soil. Refers
especially to the processes or soil-forming factors
responsible for the formation of the solum, or true
soil, from the unconsolidated parent material.

**Gleyed soil.** Soil that formed under poor drainage,
resulting in the reduction of iron and other

**Gravelly soil material.** Material that is 15 to 35 percent,
by volume, rounded or angular rock fragments, not
prominently flattened, up to 3 inches (7.6
centimeters) in diameter. Very gravelly soil
material is 35 to 60 percent of these rock
fragments, and extremely gravelly soil material is
more than 60 percent.

**Hard bedrock.** Bedrock that cannot be excavated
except by blasting or by the use of special
equipment that is not commonly used in
construction.

**Hardpan.** A hardened or cemented soil horizon, or
layer. The soil material is sandy, loamy, or clayey
and is cemented by silica or calcium carbonate.

**Hard to pack (as a restrictive feature).** The soil is
difficult to compact.

**Hill.** A natural elevation of the land surface, rising as
much as 1,000 feet above surrounding lowlands,
commonly of limited summit area and having a
well defined outline; hillsides generally have
slopes of more than 15 percent. The distinction
between a hill and a mountain is arbitrary and is
dependent on local usage.

**Horizon, soil.** A layer of soil, approximately parallel to
the surface, having distinct characteristics
produced by soil-forming processes. In the
identification of soil horizons, an uppercase letter
represents the major horizons. Numbers or
lowercase letters that follow represent subdivisions
of the major horizons. The major horizons are as
follows:

- **O horizon.**—An organic layer of fresh and
decaying plant residue.
- **A horizon.**—The mineral horizon at or near the
surface in which an accumulation of humified
organic matter is mixed with the mineral material.
Also, a plowed surface horizon, most of which was
originally part of a B horizon.
- **B horizon.**—The mineral horizon below an O, A, or
E horizon. The B horizon is in part a layer of
transition from the overlying horizon to the
underlying C horizon. The B horizon also has
distinctive characteristics, such as (1)
accumulation of clay, sesquioxides, humus, or a
combination of these; (2) granular, prismatic, or
blocky structure; (3) redder or browner colors than
those in the A horizon; or (4) a combination of these.
- **E horizon.**—The mineral horizon in which the main
feature is loss of silicate clay, iron, aluminum, or
some combination of these.
**C horizon.**—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the number 2 precedes the letter C.

**R layer.**—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

**Hydrologic soil groups.** Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff rate. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

**Igneous rock.** Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

**Illuviation.** The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

**Infiltration.** The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

**Inset fan.** The flood plain of a commonly ephemeral stream that is confined between fan remnants, basin-floor remnants, ballenas, or closely opposed fan toe slopes. Its transversely level cross section is evidence of alluviation of a fluvé. It is wide enough that raw channels cover only a fraction of its surface.

**Intermittent stream.** A stream or reach of a stream that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

**Irrigation.** Application of water to soils to assist in production of crops.

**Lacustrine deposit** (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

**Lake plain.** A major landform of some bolson floors that is nearly level and consists of fine textured, stratified bottom sediment of a Pleistocene lake.

**Lake-plain terrace.** A somewhat elevated area and component landform of a lake plain.

**Landform element.** The morphological part of a component landform. Side slope landform elements may be divided into slope components.

**Large stones** (as a restrictive feature). The soil has rock fragments that are 3 inches (7.6 centimeters) in diameter or more.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.

**Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

**Loess.** Fine grained material, dominantly of silt-sized particles, deposited by wind.

**Low strength** (as a restrictive feature). The soil is not strong enough to support a load.

**Major landform.** A subdivision of the piedmont slope or basin floor major physiographic part that reflects a major morphogenetic process taking place over a long period or that is the result of a special erosional or depositional process. Many major landforms are dissected, and their original area is occupied by component landforms.

**Major physiographic part.** The very large part of an intermontane basin that is characterized by dominant slope and position and is comprised of major landforms (e.g., steeply sloping mountains that stand above less sloping piedmonts that in turn grade to nearly level basin floors).

**Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.

**Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.

**Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

**Miscellaneous area.** An area that has little or no natural soil and supports little or no vegetation.

**Moderately coarse textured soil.** Coarse sandy loam, sandy loam, and fine sandy loam.
Moderately fine textured soil. Clay loam, sandy clay loam, and silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: Abundance—few, common, and many; size—fine, medium, and coarse; and contrast—faint, distinct, and prominent. The size measurements are of the diameter along the greatest dimension. Fine indicates less than 5 millimeters (about 0.2 inch); medium, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and coarse, more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides and considerable bare-rock surface. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Mountain-valley fan. A major landform that is the result of alluvial filling of a mountain valley or intramontane basin by coalescent valley-side slope fans whose toe slopes meet from either side of the valley along an axial drainageway. It is an extension of the upper piedmont slope into mountain valleys. Most mountain-valley fans have been dissected.

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, hardpan or claypan.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Pebbles. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedinent. The foot slope component of an erosional slope.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

- Very slow .................. less than 0.06 inch
- Slow .......................... 0.06 to 0.2 inch
- Moderately slow .............. 0.2 to 0.6 inch
- Moderate .................... 0.6 inch to 2.0 inches
- Moderately rapid ............. 2.0 to 6.0 inches
- Rapid ........................ 6.0 to 20.0 inches
- Very rapid ................... more than 20.0 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (as a restrictive feature). Water moving through the soil forms subsurface tunnels or pipelike cavities.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above the adjacent lowlands and separated from them on one or more sides by escarpments.

Playa. An ephemeraly flooded, barren area on a basin floor that is veneered with fine textured sediment and acts as a temporary or final sink for drainage water.

Ponding. Standing water on soils in closed depressional areas. The water can be removed.
only by percolation or evapotranspiration.

**Poorly graded.** Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

**Potential native plant community.** The plant community on a given site that will be established if present environmental conditions continue to prevail and the site is properly managed.

**Potential rooting depth (effective rooting depth).** Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

**Prescribed burning.** The application of fire to land under such conditions of weather, soil moisture, and time of day as presumably will result in the intensity of heat and spread required to accomplish specific forest management, wildlife, grazing, or fire hazard reduction purposes.

**Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.

**Proper grazing use.** Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. Proper grazing use increases the vigor and reproduction of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

**Range condition.** The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

**Rangeland.** Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forbs and shrub communities.

**Range site.** An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

**Reaction, soil.** A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are—

- Extremely acid .................. below 4.5
- Very strongly acid .................. 4.5 to 5.0
- Strongly acid .................. 5.1 to 5.5
- Medium acid .................. 5.6 to 6.0
- Slightly acid .................. 6.1 to 6.5
- Neutral .................. 6.6 to 7.3
- Mildly alkaline .................. 7.4 to 7.8
- Moderately alkaline .................. 7.9 to 8.4
- Strongly alkaline .................. 8.5 to 9.0
- Very strongly alkaline .................. 9.1 and higher

**Relict.** Old, or remaining from previous times; in the present context, of Pleistocene age.

**Relief.** The elevations or inequalities of a land surface, considered collectively.

**Remnant.** The remainder of a larger landform or of a land surface that has been dissected or partially buried.

**Residuum (residual soil material).** Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

**Rock fragments.** Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

**Rooting depth (as a restrictive feature).** The soil is shallow to a layer that greatly restricts roots; shallow root zone.

**Root zone.** The part of the soil that can be penetrated by plant roots.

**Runoff.** The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water. Six classes of runoff are recognized: 

- PONDED.—Little of the precipitation and run-on escapes as runoff, and free water stands on the surface for significant periods. The amount of water that must be removed from ponded areas by movement through the soil, by plants, or by evaporation is usually greater than the total rainfall. Ponding normally occurs in level to nearly level depressional areas, and the water depth may fluctuate greatly.

- VERY SLOW.—Surface water flows away slowly, and free water stands on the surface for long periods or immediately enters the soil. Most of the water passes through the soil, is used by plants, or evaporates. The soils commonly are level or nearly level or are very open and porous.

- SLOW.—Surface water flows away slowly enough
that free water stands on the surface for moderate periods or enters the soil rapidly. Most of the water passes through the soil, is used by plants, or evaporates. The soils commonly are either nearly level or very gently sloping, or they are steeper but absorb precipitation very rapidly.

**Medium.**—Surface water flows away fast enough that free water stands on the surface for only short periods. Part of the precipitation enters the soil and is used by plants, is lost by evaporation, or moves into underground channels. The soils commonly are either nearly level or gently sloping and absorb precipitation at a moderate rate, or are steeper but absorb water rapidly.

**Rapid.**—Surface water flows away fast enough that the period of concentration is brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly moderately steep or steep, and they have a moderate to slow rate of absorption.

**Very rapid.**—Surface water flows away so fast that the period of concentration is very brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly steep or very steep, and they absorb precipitation slowly.

**Run-on.** Soil moisture received as runoff from adjacent areas.

**Saline soil.** A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium. The conductivity of extract, in millimhos per centimeter, is expressed as—

- Nonsaline: 0 to 4
- Slightly saline: 4 to 8
- Moderately saline: 8 to 16
- Strongly saline: more than 16

**Sand.** As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

**Sand dune.** A component landform made up of eolian, sand-sized mineral particles. Dunes commonly are on the leeeward side of a Pleistocene lakebed.

**Sand sheet.** A major landform comprised of an extensive layer, several feet thick, of eolian sand from pluvial lake beaches, sometimes partly redeposited by water. It is spread across alluvial flats, onto piedmont slopes, or over low mountains and has an undulating and commonly duned surface.

**Sandstone.** Sedimentary rock containing dominantly sand-sized particles.

**Sedimentary rock.** Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

**Seepage (as a restrictive feature).** The movement of water through the soil. Seepage adversely affects the specified use of the soil.

**Semibolson.** An externally drained intermontane basin.

**Semibolson floor.** A specific identification for the floor of a semibolson as compared with a bolson floor.

**Series, soil.** A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the substratum. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

**Shale.** Sedimentary rock formed by the hardening of a clay deposit.

**Shoulder slope.** The convex slope component at the top of an erosional side slope.

**Shrink-swell (as a restrictive feature).** The soil shrinks when dry and swells when wet.

**Side slope.** The erosional slope around the sides of an erosional fan remnant, hill, ballena, mountain, or other landform. It is composed of shoulder slopes, back slopes, foot slopes, and toe slopes. Also, the planimetrically linear parts of the slopes around a digitally dissected fan remnant or hill or other landform as compared with the planimetrically convex nose slope and concave head slope parts.

**Silica.** A combination of silicon and oxygen. The mineral form is called quartz.

**Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

**Siltstone.** Sedimentary rock made up of dominantly silt-sized particles.

**Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

**Site Index.** A designation of the quality of a forest site. For pinyon pine and juniper stands, it is based on tree diameter at a height of 1 foot and the spacing between trees.

**Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical
distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey the following slope classes are recognized:

- Nearly level: 0 to 2 percent
- Gently sloping: 2 to 4 percent
- Moderately sloping: 4 to 8 percent
- Strongly sloping: 8 to 15 percent
- Moderately steep: 15 to 30 percent
- Steep: 30 to 50 percent
- Very steep: 50 to 75 percent
- Extremely steep: more than 75 percent

**Slope** (as a restrictive feature). The slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specified use.

**Slope component.** A morphological element of an erosional slope and a morphological subdivision of the side slope landform element.

**Small stones** (as a restrictive feature). The soil has rock fragments that are less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

**Sodic (alkali) soil.** A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

**Sodicity.** The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na\(^+\) to Ca\(^{2+}\) + Mg\(^{2+}\). The degrees of sodicity and their respective ratios are—

- Nonsodic: less than 13:1
- Slightly sodic: 13-46:1
- Strongly sodic: more than 46:1

**Soft bedrock.** Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

**Soil.** A natural, three-dimensional body at the earth’s surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

**Soil blowing** (as a restrictive feature). The soil is easily moved by wind.

**Soil separates.** Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

- Very coarse sand: 2.0 to 1.0
- Coarse sand: 1.0 to 0.5
- Medium sand: 0.5 to 0.25
- Fine sand: 0.25 to 0.10
- Very fine sand: 0.10 to 0.05
- Silt: 0.05 to 0.002
- Clay: less than 0.002

**Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the substratum. The living roots and plant and animal activities are closely confined to the solum.

**Stones.** Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 6 to 15 inches (15 to 38 centimeters) in length if flat.

**Stony.** Refers to a soil containing stones in numbers that interfere with or prevent tillage.

**Stony soil material.** Material, commonly a subsurface layer, that contains 15 to 35 percent, by volume, rock fragments that are mainly 10 to 24 inches in diameter. Very stony soil material is 35 to 60 percent stone-sized rock fragments, and extremely stony soil material is more than 60 percent.

**Stream terrace.** A transversely level erosional remnant of a former axial stream or major desert stream flood plain that slopes in the same direction as the adjacent, incised stream and is underlain by well sorted, stratified sand and gravel or by loamy or clayey sediment.

**Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), and granular. Structureless soils are either single grain (each grain by itself, as in dune sand) or massive (the particles adhering without any regular cleavage, as in many hardpans).

**Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.

**Substratum.** The part of the soil below the solum.

**Subsurface layer.** Any surface soil horizon (A, E, AB, or EB) below the surface layer.

**Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from about 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

**Summit.** The flattish top of an erosional fan remnant, hill, mountain, or other landform. The term is used
for both a landform element and a slope component.

**Tailwater.** The water just downstream of a structure.

**Talus.** Rock fragments of any size or shape, commonly coarse and angular, derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose, broken rock formed chiefly by falling, rolling, or sliding.

**Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

**Terrace.** Any part of a general slope that stands above a short, steep scarp and has a generally flat, nearly level or gently sloping summit. It may have another short scarp above the summit. Synonym: bench.

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

**Toe slope.** The lowest part of a foot slope component of an erosional slope. It is distinguished from the upper part of a foot slope by a greater accumulation of pedosediment. Also, the lowest and most gently sloping part of a slope.

**To arid (as a restrictive feature).** The soil is dry most of the time, and vegetation is difficult to establish.

**Too clayey (as a restrictive feature).** The soil is slippery and sticky when wet and is slow to dry.

**Too crusty (as a restrictive feature).** Crusting of the soil surface interferes with water intake and seedling emergence.

**Too sandy (as a restrictive feature).** The soil is soft and loose; it is droughty and low in fertility.

**Tuff.** A compacted deposit that is 50 percent or more volcanic ash and dust.

**Valley.** An elongated depressional area cut by stream erosion and the associated water erosion of its side slopes (stream valley). Also used to describe intermontane basins.

**Variant, soil.** A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

**Variegation.** Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

**Water-supplying capacity.** The total amount of water available in the soil for plant growth in a normal year from precipitation, from run-on, and from a capillary fringe minus runoff.

**Water table.** The upper level of ground water or that level below which the soil is saturated.

**Water table (perched).** The water table of a saturated layer of soil that is separated from an underlying saturated layer by an unsaturated layer.

**Weathering.** All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

**Wetness (as a restrictive feature).** The soil is wet during the period of use.
Appendix
### Criteria Used in Rating Soils for Selected Uses

#### Roadfill

<table>
<thead>
<tr>
<th>Property</th>
<th>Limits</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
<td>Fair</td>
</tr>
<tr>
<td>1. USDA texture</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2. Depth to bedrock (inches)</td>
<td>&gt;60</td>
<td>40-60</td>
</tr>
<tr>
<td>3. Depth to cemented pan (inches)</td>
<td>&gt;60</td>
<td>40-60</td>
</tr>
<tr>
<td>4. Shrink-swell potential (^1)</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>5. AASHTO group index number (^2) (^3)</td>
<td>&lt;5</td>
<td>5-8</td>
</tr>
<tr>
<td>6. Layer thickness (inches)</td>
<td>&gt;60</td>
<td>30-60</td>
</tr>
<tr>
<td>7. Fraction greater than 3 inches (percent by weight) (^4)</td>
<td>&lt;25</td>
<td>25-50</td>
</tr>
<tr>
<td>8. Depth to high water table (feet)</td>
<td>&gt;3</td>
<td>1-3</td>
</tr>
</tbody>
</table>

---

1 Evaluate the thickest layer between 10 and 60 inches and also the bottom layer. Choose the best rating. When rating is based on bottom layer, verify thickness.

2 If in kaolinitic family, rate one class better if experience confirms.

3 \( GIN = (F-35)(0.005(LL-40)) + 0.01(F-15)(PI-10) \) where \( F \) = percent passing No. 200 sieve. If \( F < 35 \) and \( PI > 11 \), use only part 2 of equation. Use median values.

4 Weighted average to 40 inches.
## Shallow Excavations

<table>
<thead>
<tr>
<th>Property</th>
<th>Limits</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slight</td>
<td>Moderate</td>
</tr>
<tr>
<td>1. USDA texture</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2. Depth to bedrock (inches):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard</td>
<td>&gt;60</td>
<td>40-60</td>
</tr>
<tr>
<td>Soft</td>
<td>&gt;40</td>
<td>20-40</td>
</tr>
<tr>
<td>3. Depth to cemented pan (inches):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thick</td>
<td>&gt;60</td>
<td>40-60</td>
</tr>
<tr>
<td>Thin</td>
<td>&gt;40</td>
<td>20-40</td>
</tr>
<tr>
<td>4. USDA texture (20 to 60 inches) ...</td>
<td>---</td>
<td>SI ¹</td>
</tr>
<tr>
<td>5. USDA texture (20 to 60 inches) ...</td>
<td>---</td>
<td>C, Sic</td>
</tr>
<tr>
<td>7. Bulk density (g/cc)</td>
<td>---</td>
<td>&gt;1.8</td>
</tr>
<tr>
<td>8. Unified (20 to 60 inches)</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>9. Fraction greater than 3 inches (percent by weight) ²</td>
<td>&lt;25</td>
<td>25-50</td>
</tr>
<tr>
<td>10. Depth to high water table (feet) ...</td>
<td>&gt;6</td>
<td>---</td>
</tr>
<tr>
<td>11. Flooding</td>
<td>None, rare</td>
<td>Common</td>
</tr>
<tr>
<td>12. Slope (percent)</td>
<td>&lt;8</td>
<td>8-15</td>
</tr>
</tbody>
</table>

¹ In areas of loess, rating should be slight.
² Weighted average to 40 inches.
³ If the soil is susceptible to movement downslope when loaded, excavated, or wet, rate "Severe—slippage."
## Local Roads and Streets

<table>
<thead>
<tr>
<th>Property</th>
<th>Limits</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slight</td>
<td>Moderate</td>
</tr>
<tr>
<td>1. USDA texture</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2. Total subsidence</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3. Depth to bedrock (inches):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard</td>
<td>&gt;40</td>
<td>20-40</td>
</tr>
<tr>
<td>Soft</td>
<td>&gt;20</td>
<td>&lt;20</td>
</tr>
<tr>
<td>4. Depth to cemented pan (inches):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thick</td>
<td>&gt;40</td>
<td>20-40</td>
</tr>
<tr>
<td>Thin</td>
<td>&gt;20</td>
<td>&lt;20</td>
</tr>
<tr>
<td>5. Shrink-swell potential 1</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>6. AASHTO group index number 2, 3</td>
<td>&lt;5</td>
<td>5-8</td>
</tr>
<tr>
<td>7. Depth to high water table (feet) ...</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>&gt;2.5</td>
<td>1.0-2.5</td>
</tr>
<tr>
<td>8. Slope (percent)</td>
<td>&lt;8</td>
<td>8-15</td>
</tr>
<tr>
<td>9. Flooding</td>
<td>None</td>
<td>Rare</td>
</tr>
<tr>
<td>10. Potential frost action</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>11. Fraction greater than 3 inches (percent by weight) 4</td>
<td>&lt;25</td>
<td>25-50</td>
</tr>
</tbody>
</table>

1. Thickest layer between 10 and 40 inches.
2. GIN = (F-35)(2 + .005(LL-40)) + .01(F-15)(PI-10) where F = percent passing No. 200 sieve. If F is <35 and PI is >11, use only part 2 of equation. Use median values.
3. If in kaolinitic family, rate one class better if experience confirms.
4. Weighted average to 40 inches.
5. If the soil is susceptible to movement downslope when loaded, excavated, or wet, rate “Severe—slippage.”
6. If the soil is susceptible to the formation of pits caused by the melting of ground ice when the ground cover is removed, rate “Severe—pitting.”
7. If the soil is susceptible to differential settling, rate “Severe—unstable fill.”
Embankments, Dikes, and Levees

<table>
<thead>
<tr>
<th>Property</th>
<th>Limits</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slight</td>
<td>Moderate</td>
</tr>
<tr>
<td>USDA texture</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Layer thickness (inches)</td>
<td>&gt;60</td>
<td>30-60</td>
</tr>
<tr>
<td>Unified ¹</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unified ¹</td>
<td>...</td>
<td>GM, ³ CL ⁴</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unified ¹</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Fraction greater than 3 inches (percent by weight) ⁸</td>
<td>&lt;15</td>
<td>15-35</td>
</tr>
<tr>
<td>Depth to high water table (feet)</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Apparent</td>
<td>&gt;4</td>
<td>2-4</td>
</tr>
<tr>
<td>Perched</td>
<td>&gt;3</td>
<td>1-3</td>
</tr>
<tr>
<td>Sodium adsorption ratio in the upper 40 inches (great group or phase)</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salinity (mmhos/cm)</td>
<td>&lt;8</td>
<td>8-16</td>
</tr>
</tbody>
</table>

¹ Thickest layer between 10 and 60 inches.
² Rate moderate if more than 20 percent passing No. 200 sieve and slight if more than 30 percent passing No. 200 sieve.
³ Rate slight if less than 35 percent passing No. 200 sieve, less than 50 percent passing No. 40 sieve, and less than 65 percent passing No. 10 sieve. The soil must meet all three criteria before it is rated slight.
⁴ Rate slight if PI is greater than 15.
⁵ Rate moderate if PI is greater than 10.
⁶ Rate moderate if less than 70 percent passing No. 40 sieve and less than 90 percent passing No. 10 sieve, and rate slight if less than 60 percent passing No. 40 sieve and less than 75 percent passing No. 10 sieve.
⁷ Rate moderate if PI is less than 40.
⁸ Weighted average to 40 inches.
### Topssoil

<table>
<thead>
<tr>
<th>Property</th>
<th>Limits</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
<td>Fair</td>
</tr>
<tr>
<td>1. USDA texture</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>2. Depth to bedrock (inches)</td>
<td>&gt;40</td>
<td>20-40</td>
</tr>
<tr>
<td>3. Depth to cemented pan (inches)</td>
<td>&gt;40</td>
<td>20-40</td>
</tr>
<tr>
<td>4. Depth to bulk density greater than 1.8 g/cc (inches)</td>
<td>&gt;40</td>
<td>20-40</td>
</tr>
<tr>
<td>5. USDA texture ¹</td>
<td>...</td>
<td>LCOS, LS, LFS,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LVFS</td>
</tr>
<tr>
<td>6. USDA texture ¹</td>
<td>...</td>
<td>SCL, CL, SICL ²</td>
</tr>
<tr>
<td>7. USDA texture ¹</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Fraction greater than 3 inches (percent by weight): ³</td>
<td>&lt;5</td>
<td>5-25</td>
</tr>
<tr>
<td>0 to 40 inches</td>
<td>&lt;15</td>
<td>15-30</td>
</tr>
<tr>
<td>40 to 60 inches</td>
<td>&lt;25</td>
<td>25-50</td>
</tr>
<tr>
<td>9. Coarse fragments (percent): ³</td>
<td>&lt;4</td>
<td>4-8</td>
</tr>
<tr>
<td>0 to 40 inches</td>
<td>&lt;5</td>
<td>5-25</td>
</tr>
<tr>
<td>40 to 60 inches</td>
<td>&lt;25</td>
<td>25-50</td>
</tr>
<tr>
<td>10. Salinity (mmhos/cm) ¹</td>
<td>&lt;4</td>
<td>4-8</td>
</tr>
<tr>
<td>11. Layer thickness (inches)</td>
<td>&gt;40</td>
<td>20-40</td>
</tr>
<tr>
<td>12. Depth to high water table (feet)</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>13. Sodium adsorption ratio in the upper 40 inches (great group or phase)</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Soil reaction (pH) ¹</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>15. Slope (percent)</td>
<td>&lt;8</td>
<td>8-15</td>
</tr>
<tr>
<td>16. Carbonates</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

¹ Thickest layer between 0 and 40 inches.
² If soil contains more than 3 percent organic matter and has less than 35 percent clay, rate good.
³ Sum (100 minus percent passing No. 10 sieve) and fraction greater than 3 inches. Use dominant condition for restrictive feature.
⁴ If the amount of carbonate is so high that it restricts the growth of plants, rate "Poor—excess lime."
## Pond Reservoir Areas

<table>
<thead>
<tr>
<th>Property</th>
<th>Limits</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Slight</td>
<td>Moderate</td>
</tr>
<tr>
<td>1. USDA texture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Permeability between 20 and 60 inches</td>
<td>&lt;0.6</td>
<td>0.6-2.0</td>
</tr>
<tr>
<td>inches (inches/hour)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>inches to bedrock (inches)</td>
<td>&gt;60</td>
<td>20-60</td>
</tr>
<tr>
<td>4. Depth to cemented pan (inches)</td>
<td>&gt;60</td>
<td>20-60</td>
</tr>
<tr>
<td>5. Slope (percent)</td>
<td>&lt;3</td>
<td>3-8</td>
</tr>
<tr>
<td>6. USDA texture (all depths)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Downslope movement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Formation of pits</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. If the soil is susceptible to movement downslope when loaded, excavated, or wet, rate "Severe—slippage."

2. If the soil is susceptible to the formation of pits caused by the melting of ground ice when the surface cover is removed, rate "Severe—pitting."
### Drainage

<table>
<thead>
<tr>
<th>Property</th>
<th>Limits</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. USDA texture</td>
<td>Ice</td>
<td>Permafrost.</td>
</tr>
<tr>
<td>2. Depth to high water table (feet) (^1)</td>
<td>&gt;3 (^2)</td>
<td>Deep to water.</td>
</tr>
<tr>
<td>3. Permeability in the upper 40 inches (inches/hour)</td>
<td>&lt;0.2</td>
<td>Percs slowly.</td>
</tr>
<tr>
<td>4. Depth to bedrock (inches)</td>
<td>&lt;40</td>
<td>Depth to rock.</td>
</tr>
<tr>
<td>5. Depth to cemented pan (inches)</td>
<td>&lt;40</td>
<td>Cemented pan.</td>
</tr>
<tr>
<td>6. Flooding</td>
<td>Common</td>
<td>Flooding.</td>
</tr>
<tr>
<td>7. Total subsidence</td>
<td>Any entry</td>
<td>Subsides.</td>
</tr>
<tr>
<td>8. Fraction greater than 3 inches (percent by weight) (^3)</td>
<td>&gt;25</td>
<td>Large stones.</td>
</tr>
<tr>
<td>10. Slope (percent)</td>
<td>&gt;3</td>
<td>Slope.</td>
</tr>
<tr>
<td>11. USDA texture (^3)</td>
<td>COS, S, FS, VFS, LCOS, LS, LFS, LVFS, SG, G</td>
<td>Cutbanks cave.</td>
</tr>
<tr>
<td>12. Salinity (mmhos/cm) (any depth)</td>
<td>&gt;8</td>
<td>Excess salt.</td>
</tr>
<tr>
<td>13. Sodium adsorption ratio in the upper 40 inches (great group or phase) (^3)</td>
<td>&gt;12 (natric, halic, alkali phases)</td>
<td>Excess sodium.</td>
</tr>
<tr>
<td>15. Soil reaction (pH) (any depth)</td>
<td>&lt;3.6</td>
<td>Too acid.</td>
</tr>
<tr>
<td>17. Complex landscape (^5)</td>
<td></td>
<td>Complex slope.</td>
</tr>
<tr>
<td>18. Availability of outlets (^6)</td>
<td></td>
<td>Poor outlets.</td>
</tr>
</tbody>
</table>

\(^1\) If "Deep to water," disregard other properties.
\(^2\) If irrigated, consider other restrictive features if the water table is between 3 and 5 feet.
\(^3\) Thickest layer between 10 and 60 inches.
\(^4\) If the soil is susceptible to movement downslope when loaded, excavated, or wet, list "Slippage" as a restrictive feature.
\(^5\) If complex and irregular slopes cause difficulty in design, installation, or functioning of the system, list "Complex slope" as a restrictive feature.
\(^6\) If good outlets are difficult to find, list "Poor outlets" as a restrictive feature.
## Irrigation

<table>
<thead>
<tr>
<th>Property</th>
<th>Limits</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. USDA texture</td>
<td>Ice</td>
<td>Permafrost.</td>
</tr>
<tr>
<td>2. Slope (percent)</td>
<td>&gt;3</td>
<td>Slope.</td>
</tr>
<tr>
<td>3. Fraction greater than 3 inches (percent by weight)</td>
<td>&gt;25</td>
<td>Large stones.</td>
</tr>
<tr>
<td>4. Depth to high water table (feet)</td>
<td>+</td>
<td>Ponding.</td>
</tr>
<tr>
<td></td>
<td>&lt;3</td>
<td>Wetness.</td>
</tr>
<tr>
<td>5. Available water capacity (inches/inch)</td>
<td>&lt;0.10</td>
<td>Droughty.</td>
</tr>
<tr>
<td>6. USDA texture (surface layer)</td>
<td>COS, S, FS, VFS, LCOS, LS, LFS, LVFS</td>
<td>Fast intake.</td>
</tr>
<tr>
<td>7. USDA texture (surface layer)</td>
<td>SIC, C, SC</td>
<td>Slow intake.</td>
</tr>
<tr>
<td>8. Wind erodibility group</td>
<td>1, 2, 3</td>
<td>Soil blowing.</td>
</tr>
<tr>
<td>9. Permeability in the upper 60 inches (inches hour)</td>
<td>&lt;0.2</td>
<td>Percs slowly.</td>
</tr>
<tr>
<td>10. Depth to bedrock (inches)</td>
<td>&lt;40</td>
<td>Depth to rock.</td>
</tr>
<tr>
<td>11. Depth to cemented pan (inches)</td>
<td>&lt;40</td>
<td>Cemented pan.</td>
</tr>
<tr>
<td>12. Fragipan (great group)</td>
<td>All fragi</td>
<td>Rooting depth.</td>
</tr>
<tr>
<td>13. Bulk density in the upper 40 inches (g/cc)</td>
<td>&gt;1.7</td>
<td>Rooting depth.</td>
</tr>
<tr>
<td>14. Erosion factor K (surface layer)</td>
<td>&gt;.35</td>
<td>Erodes easily.</td>
</tr>
<tr>
<td>15. Flooding</td>
<td>Common</td>
<td>Flooding.</td>
</tr>
<tr>
<td>16. Sodium adsorption ratio in the upper 40 inches (great group or phase)</td>
<td>&gt;12</td>
<td>Excess sodium.</td>
</tr>
<tr>
<td></td>
<td>(matric, halic, alkali phases)</td>
<td></td>
</tr>
<tr>
<td>17. Salinity in the upper 40 inches (mmhos/cm)</td>
<td>&gt;4</td>
<td>Excess salt.</td>
</tr>
<tr>
<td>18. Soil reaction (pH) (any depth)</td>
<td>&lt;3.6</td>
<td>Too acid.</td>
</tr>
<tr>
<td>19. Complex landscape</td>
<td>(3)</td>
<td>Complex slope.</td>
</tr>
<tr>
<td>20. Formation of pits</td>
<td>(*)</td>
<td>Pitting.</td>
</tr>
</tbody>
</table>

1 Weighted average to 40 inches.
2 Disregard if depth to water table is below 3 feet during growing season.
3 If complex and irregular slopes cause difficulty in design, installation, or functioning of the system, list "Complex slope" as a restrictive feature.
4 If the soil is susceptible to the formation of pits caused by the melting of ground ice when ground cover is removed, list "Pitting" as a restrictive feature.
5 If the amount of carbonate is so high that it restricts the growth of plants, list "Excess lime" as a restrictive feature.
### Terraces and Diversions

<table>
<thead>
<tr>
<th>Property</th>
<th>Limits</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. USDA texture</td>
<td>Ice</td>
<td>Permafrost.</td>
</tr>
<tr>
<td>2. Slope (percent)</td>
<td>&gt;8</td>
<td>Slope.</td>
</tr>
<tr>
<td>3. Fraction greater than 3 inches (percent by weight)</td>
<td>&gt;15</td>
<td>Large stones.</td>
</tr>
<tr>
<td>4. Depth to bedrock (inches)</td>
<td>&lt;40</td>
<td>Depth to rock.</td>
</tr>
<tr>
<td>5. Depth to cemented pan (inches)</td>
<td>&lt;40</td>
<td>Cemented pan.</td>
</tr>
<tr>
<td>6. Erosion factor K (upper 40 inches)</td>
<td>&gt;.35</td>
<td>Erodes easily.</td>
</tr>
<tr>
<td></td>
<td>&lt;3.0</td>
<td></td>
</tr>
<tr>
<td>8. Fragipan (great group)</td>
<td>All fragi</td>
<td>Rooting depth.</td>
</tr>
<tr>
<td>9. USDA texture ²</td>
<td>COS, S, FS, LS, LCOS, SG</td>
<td>Too sandy.</td>
</tr>
<tr>
<td>10. Wind erodibility group</td>
<td>1, 2, 3</td>
<td>Soil blowing.</td>
</tr>
<tr>
<td>11. Permeability (inches/hour) ³</td>
<td>&lt;0.2</td>
<td>Percs slowly.</td>
</tr>
<tr>
<td>12. Downslope movement</td>
<td>(³)</td>
<td>Slippage.</td>
</tr>
<tr>
<td>13. Complex landscape</td>
<td>(*)</td>
<td>Complex slope.</td>
</tr>
<tr>
<td>14. Availability of outlets</td>
<td>(*)</td>
<td>Poor outlets.</td>
</tr>
</tbody>
</table>

¹ Weighted average to 40 inches.
² Thickest layer between 10 and 60 inches.
³ If the soil is susceptible to movement downslope when loaded, excavated, or wet, list "Slippage" as a restrictive feature.
⁴ If complex and irregular slopes cause difficulty in design, installation, or functioning of the system, list "Complex slope" as a restrictive feature.
⁵ If good outlets are difficult to find, list "Poor outlets" as a restrictive feature.
## Sand

<table>
<thead>
<tr>
<th>Property</th>
<th>Probable source</th>
<th>Improbable source</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. USDA texture</td>
<td></td>
<td>Ice</td>
<td>Permafrost.</td>
</tr>
<tr>
<td>2. Unified 1</td>
<td>SW, SP, SW-SM, SP-SM</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>GW, GP, GW-GM, GP-GM</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>GW, GP, GW-GM, GP-GM</td>
<td>Small stones.</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>PT</td>
<td>Excess humus.</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>All other</td>
<td>Excess fines.</td>
</tr>
<tr>
<td>3. Layer thickness (inches)</td>
<td>&gt;36</td>
<td>&lt;36</td>
<td>Thin layer.</td>
</tr>
<tr>
<td>4. Fraction greater than 3 inches</td>
<td>&lt;50</td>
<td>&gt;50</td>
<td>Large stones.</td>
</tr>
<tr>
<td>(percent by weight)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Evaluate the thickest layer between 10 and 60 inches and also the bottom layer. Choose the best rating. When rating is based on bottom layer, verify thickness.

2 Percent passing No. 4 sieve minus percent passing No. 200 sieve is greater than 25.

3 Percent passing No. 4 sieve minus percent passing No. 200 sieve is less than 25.

4 Thickest layer between 10 and 60 inches.
## Gravel

<table>
<thead>
<tr>
<th>Property</th>
<th>Limits</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Probable source</td>
<td>Improbable source</td>
</tr>
<tr>
<td>1. USDA texture</td>
<td>---</td>
<td>Ice</td>
</tr>
<tr>
<td>2. Unified</td>
<td>GW, GP, GW-GM, GP-GM</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>SW, SP, SW-SM, SP-SM</td>
<td>SW, SP, SW-SM, SP-SM</td>
</tr>
<tr>
<td>3. Layer thickness (inches)</td>
<td>&gt;36</td>
<td>&lt;36</td>
</tr>
<tr>
<td>4. Fraction greater than 3 inches (percent by weight)</td>
<td>&lt;50</td>
<td>&gt;50</td>
</tr>
</tbody>
</table>

---

1. Evaluate the thickest layer between 10 and 60 inches and also the bottom layer. Choose the best rating. When rating is based on bottom layer, verify thickness.

2. 100 minus percent passing No. 4 sieve is greater than 25.

3. 100 minus percent passing No. 4 sieve is less than 25.

4. Thickest layer between 10 and 60 inches.
## Daily Cover for Landfill

<table>
<thead>
<tr>
<th>Property</th>
<th>Limits</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
<td>Fair</td>
</tr>
<tr>
<td>1. USDA texture</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2. Depth to bedrock (inches)</td>
<td>&gt;60</td>
<td>40-60</td>
</tr>
<tr>
<td>3. Depth to cemented pan (inches)</td>
<td>&gt;60</td>
<td>40-60</td>
</tr>
<tr>
<td>5. USDA texture (^1) 2 3</td>
<td>---</td>
<td>CL, SICL, SC</td>
</tr>
<tr>
<td>6. USDA texture (^1)</td>
<td>---</td>
<td>LCOS, LS, LFS, VFS</td>
</tr>
<tr>
<td>7. Unified (^1) 2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>8. Coarse fragments (percent) (^1) 4</td>
<td>&lt;25</td>
<td>25-50</td>
</tr>
<tr>
<td>9. Fraction greater than 3 inches (percent by weight) (^1) 4</td>
<td>&lt;25</td>
<td>25-50</td>
</tr>
<tr>
<td>10. Slope (percent)</td>
<td>&lt;8</td>
<td>8-15</td>
</tr>
<tr>
<td></td>
<td>&gt;3.5</td>
<td>1.5-3.5</td>
</tr>
<tr>
<td>12. Unified (^1)</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>13. Layer thickness (inches)</td>
<td>&gt;80</td>
<td>40-60</td>
</tr>
<tr>
<td>14. Soil reaction (pH)</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>15. Salinity in the upper 60 inches (mmhos/cm) (^3)</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>16. Sodium adsorption ratio (great group) (^1) 3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Thickest layer between 10 and 60 inches.
\(^2\) If in kaolinitic family, rate one class better if experience confirms.
\(^3\) Disregard in all Andisols except Salorthids and Aquic intergrades and all Torri great groups of Entisols except Aquic.
\(^4\) Sum (100 minus percent passing No. 10 sieve) and fraction greater than 3 inches. Use dominant condition for restrictive feature.
\(^5\) If the amount of carbonate is so high that it restricts the growth of plants, rate "Poor—excess lime."
Guide for Estimating the Hazard of Erosion on Bare Soil in Nevada

"K" means erosion factor K; "S" means percent slope; "I" means wind erodibility index; "C" means climatic factor.

<table>
<thead>
<tr>
<th></th>
<th>Water (K x S)</th>
<th>Wind (I x C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slight</td>
<td>&lt;4</td>
<td>&lt;60</td>
</tr>
<tr>
<td>Moderate</td>
<td>4-8</td>
<td>60-100</td>
</tr>
<tr>
<td>High</td>
<td>&gt;8</td>
<td>&gt;100</td>
</tr>
</tbody>
</table>
## Range Seeding

<table>
<thead>
<tr>
<th>Property</th>
<th>Good</th>
<th>Limits</th>
<th>Poor</th>
<th>Restrictive feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture regime</td>
<td>Aquic, xeric, ustic, and xeric and ustic bordering on aridic or torric.</td>
<td>Aridic and torric bordering on aquic, xeric, or ustic.</td>
<td>Aridic and torric.</td>
<td>Too arid.</td>
</tr>
<tr>
<td>Effective moisture ¹</td>
<td>&gt;10 in. (25 cm)</td>
<td>7-10 in. (17.5-25 cm)</td>
<td>&lt;7 in. (17.5 cm)</td>
<td>Too arid.</td>
</tr>
<tr>
<td>Available water capacity</td>
<td>Surface 10 in. (27 cm) &gt;1.25 in. (3.2 cm). Soil profile &gt; 4 in. (10.2 cm).</td>
<td>Surface 10 in. (25 cm) 0.75-1.25 in. (1.9-3.2 cm). Soil profile 2.5-4 in. (6.4-10.2 cm).</td>
<td>Surface 10 in. (25 cm) &lt;0.75 in. (1.9 cm). Soil profile &lt; 2.5 in. (6.4 cm).</td>
<td>Droughty.</td>
</tr>
<tr>
<td>Texture surface 7 in. (17.5 cm)</td>
<td>LVFS, COSL, SL, FSL, VFSL, L SIL, SCL, and CL SICL with &lt;35% C.</td>
<td>VFS, LFS, SC, SIC, C and CL and SICL with &gt;35% C.</td>
<td>LS, LCOS, FS, COS.</td>
<td>Too sandy. Too clayey.</td>
</tr>
<tr>
<td>Rock fragments in surface 7 in. (17.5 cm)</td>
<td>GR &lt;35%; CB &lt;15%; ST &lt;3%. Total rock fragments &lt;35%.</td>
<td>GR &lt;35%; CB 15-35%; ST 3-15%. Total rock fragments &lt;35%.</td>
<td>GR &gt;35%; CB 35%; ST &gt;15%. Total rock fragments &gt;35%.</td>
<td>Small stones. Large stones.</td>
</tr>
<tr>
<td>Depth to abrupt A-B texture boundary ²</td>
<td>&gt;10 in. (25 cm)</td>
<td>&gt;10 in. (25 cm)</td>
<td>&lt;10 in. (25 cm)</td>
<td>Rooting depth.</td>
</tr>
<tr>
<td>Depth to bedrock or hardpan</td>
<td>&gt;20 in. (50 cm)</td>
<td>10-20 in. (25-50 cm)</td>
<td>&lt;10 in. (25 cm)</td>
<td>Depth to rock/pan.</td>
</tr>
<tr>
<td>Electrical conductivity-saturation</td>
<td>&lt;2 mmhos/cm (0.2 s/m) in upper 20 in. (50 cm).</td>
<td>2-4 mmhos/cm (0.2-0.4 s/m) in upper 10 in. (25 cm) and 4-8 mmhos/cm (0.4-0.8 s/m) in 10-20 in. (25-50 cm).</td>
<td>&gt;4 mmhos/cm (0.4 s/m) in upper 10 in. (25 cm) and/or &gt;8 mmhos/cm (0.8 s/m) in 10-20 in. (25-50 cm).</td>
<td>Excess salt.</td>
</tr>
<tr>
<td>Sodium adsorption ratio</td>
<td>&lt;8 in upper 20 in. (50 cm).</td>
<td>8-13 in upper 10 in. (25 cm) and &lt;20 in 10-20 in. (25-50 cm).</td>
<td>&gt;13 in upper 10 in. (25 cm) and/or &gt;20 in 10-20 in. (25-50 cm).</td>
<td>Excess sodium.</td>
</tr>
<tr>
<td>K x percent slope ³</td>
<td>&lt;4 ; &lt;6 ⁵</td>
<td>4-6 ; 6-8 ⁵</td>
<td>&gt;6 ⁴ ; &gt;8 ⁵</td>
<td>Erodes easily.</td>
</tr>
<tr>
<td>I x C ⁶</td>
<td>&lt;60</td>
<td>&lt;60</td>
<td>&gt;60</td>
<td>Soil blowing.</td>
</tr>
<tr>
<td>Soil surface morphological types ⁷</td>
<td>Types I and II &gt;60%; Type IV &lt;5%; or with mollic epipedon ⁶</td>
<td>Types I and II 20-60%; Type IV &lt;10% ⁶</td>
<td>Type III &lt;60%; Type IV &gt;10% ⁶</td>
<td>Too crusty.</td>
</tr>
</tbody>
</table>

¹ Moisture from precipitation, run-on, and ground water budgeted to actual evapotranspiration.
² Sheet and rill erosion hazard (bare soil).
³ For ustic bordering on aridic or torric, and aridic or torric bordering on ustic moisture regimes.
⁴ For xeric, xeric bordering on aridic or torric, and aridic or torric bordering on xeric moisture regimes.
⁵ Wind erosion hazard (bare soil).
⁶ Soils without crusting morphology are to be included in Types I and II for rating.

---

Lander County, Nevada, South Part

805

---

Tables
### TABLE 1.—TEMPERATURE AND PRECIPITATION

<table>
<thead>
<tr>
<th>Month</th>
<th>Temperature</th>
<th>Precipitation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td>daily</td>
<td>daily</td>
</tr>
<tr>
<td></td>
<td>maximum</td>
<td>minimum</td>
</tr>
<tr>
<td></td>
<td>higher</td>
<td>lower</td>
</tr>
<tr>
<td></td>
<td>°F</td>
<td>°F</td>
</tr>
<tr>
<td>January-------</td>
<td>41.0</td>
<td>19.0</td>
</tr>
<tr>
<td>February------</td>
<td>43.9</td>
<td>21.8</td>
</tr>
<tr>
<td>March---------</td>
<td>47.8</td>
<td>23.8</td>
</tr>
<tr>
<td>April---------</td>
<td>54.8</td>
<td>29.0</td>
</tr>
<tr>
<td>May-----------</td>
<td>65.6</td>
<td>37.5</td>
</tr>
<tr>
<td>June----------</td>
<td>76.9</td>
<td>45.6</td>
</tr>
<tr>
<td>July----------</td>
<td>87.3</td>
<td>53.9</td>
</tr>
<tr>
<td>August-------</td>
<td>84.5</td>
<td>52.2</td>
</tr>
<tr>
<td>September----</td>
<td>76.2</td>
<td>44.7</td>
</tr>
<tr>
<td>October------</td>
<td>64.8</td>
<td>36.0</td>
</tr>
<tr>
<td>November-----</td>
<td>50.3</td>
<td>26.7</td>
</tr>
<tr>
<td>December-----</td>
<td>41.7</td>
<td>20.4</td>
</tr>
</tbody>
</table>

**Recorded in the period 1951-78 at Austin**

<table>
<thead>
<tr>
<th>Yearly:</th>
<th>Average</th>
<th></th>
<th>Extreme</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>61.2</td>
<td>34.2</td>
<td>47.8</td>
<td></td>
<td>4,186</td>
<td>12.90</td>
</tr>
</tbody>
</table>

**Recorded in the period 1951-78 at Battle Mountain**

<table>
<thead>
<tr>
<th>Yearly:</th>
<th>Average</th>
<th></th>
<th>Extreme</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65.5</td>
<td>31.8</td>
<td>46.7</td>
<td></td>
<td>4,459</td>
<td>7.33</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Month</th>
<th>Average Temperature</th>
<th>Average Precipitation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>°F</td>
<td>°F</td>
</tr>
<tr>
<td>January</td>
<td>42.6</td>
<td>13.4</td>
</tr>
<tr>
<td>February</td>
<td>46.9</td>
<td>17.9</td>
</tr>
<tr>
<td>March</td>
<td>52.5</td>
<td>21.2</td>
</tr>
<tr>
<td>April</td>
<td>56.7</td>
<td>24.0</td>
</tr>
<tr>
<td>May</td>
<td>70.3</td>
<td>32.1</td>
</tr>
<tr>
<td>June</td>
<td>78.7</td>
<td>40.3</td>
</tr>
<tr>
<td>July</td>
<td>88.5</td>
<td>45.9</td>
</tr>
<tr>
<td>August</td>
<td>86.4</td>
<td>43.2</td>
</tr>
<tr>
<td>September</td>
<td>77.6</td>
<td>34.7</td>
</tr>
<tr>
<td>October</td>
<td>65.5</td>
<td>24.9</td>
</tr>
<tr>
<td>November</td>
<td>52.5</td>
<td>20.1</td>
</tr>
<tr>
<td>December</td>
<td>40.2</td>
<td>11.1</td>
</tr>
<tr>
<td>Yearly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>63.2</td>
<td>27.4</td>
</tr>
<tr>
<td>Extreme</td>
<td></td>
<td>45.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units</th>
<th>In</th>
<th>In</th>
<th>In</th>
<th>In</th>
</tr>
</thead>
</table>
| Recorded in the period 1965-78 at Central Field Laboratory

<table>
<thead>
<tr>
<th>2 years in 10 will have--</th>
<th>Average</th>
<th>2 years in 10 will have--</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>°F</td>
<td>°F</td>
<td>°F</td>
</tr>
<tr>
<td>Maximum</td>
<td>Minimum</td>
<td>growing</td>
<td>Less</td>
</tr>
<tr>
<td>higher</td>
<td>lower</td>
<td>degree</td>
<td>than--</td>
</tr>
<tr>
<td>than--</td>
<td>than--</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).
TABLE 2.--FREEZE DATES IN SPRING AND FALL

<table>
<thead>
<tr>
<th>Probability</th>
<th>Temperature</th>
<th>24°F or lower</th>
<th>28°F or lower</th>
<th>32°F or lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last freezing temperature in spring:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 year in 10 later than--</td>
<td>May 21</td>
<td>June 8</td>
<td>June 19</td>
<td></td>
</tr>
<tr>
<td>2 years in 10 later than--</td>
<td>May 14</td>
<td>June 2</td>
<td>June 13</td>
<td></td>
</tr>
<tr>
<td>5 years in 10 later than--</td>
<td>May 3</td>
<td>May 21</td>
<td>June 3</td>
<td></td>
</tr>
<tr>
<td>First freezing temperature in fall:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 year in 10 earlier than--</td>
<td>Sept. 27</td>
<td>Sept. 27</td>
<td>Sept. 5</td>
<td></td>
</tr>
<tr>
<td>2 years in 10 earlier than--</td>
<td>Oct. 4</td>
<td>Sept. 23</td>
<td>Sept. 11</td>
<td></td>
</tr>
<tr>
<td>5 years in 10 earlier than--</td>
<td>Oct. 18</td>
<td>Oct. 4</td>
<td>Sept. 23</td>
<td></td>
</tr>
</tbody>
</table>

Recorded in the period 1951-78 at Austin

| Last freezing temperature in spring: | | | |
| 1 year in 10 later than-- | May 18 | June 4 | June 21 |
| 2 years in 10 later than-- | May 13 | May 28 | June 14 |
| 5 years in 10 later than-- | May 3 | May 15 | May 31 |
| First freezing temperature in fall: | | | |
| 1 year in 10 earlier than-- | Sept. 16 | Sept. 3 | Aug. 26 |
| 2 years in 10 earlier than-- | Sept. 21 | Sept. 9 | Aug. 31 |
| 5 years in 10 earlier than-- | Oct. 1 | Sept. 20 | Sept. 11 |

Recorded in the period 1951-78 at Battle Mountain
<table>
<thead>
<tr>
<th>Probability</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$24^\circ F$</td>
</tr>
<tr>
<td></td>
<td>or lower</td>
</tr>
<tr>
<td>Recorded in the period 1965-78 at Central Field Laboratory</td>
<td></td>
</tr>
</tbody>
</table>

| Last freezing temperature in spring: | | |
| 1 year in 10 later than-- | June 19 | June 29 | June 3 |
| 2 years in 10 later than-- | June 11 | June 22 | June 27 |
| 5 years in 10 later than-- | May 27  | June 10 | June 17 |

<p>| First freezing temperature in fall: | | |
| 1 year in 10 earlier than-- | Aug. 31 | Aug. 22 | July 16 |
| 2 years in 10 earlier than-- | Sept. 8 | Aug. 29 | July 28 |
| 5 years in 10 earlier than-- | Sept. 23 | Sept. 11 | Aug. 20 |</p>
<table>
<thead>
<tr>
<th>Probability</th>
<th>Daily minimum temperature</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Higher than 24°F</td>
<td>Higher than 28°F</td>
</tr>
<tr>
<td></td>
<td>Days</td>
<td>Days</td>
</tr>
<tr>
<td>Recorded in the period 1951-78 at Austin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 years in 10</td>
<td>138</td>
<td>112</td>
</tr>
<tr>
<td>8 years in 10</td>
<td>148</td>
<td>120</td>
</tr>
<tr>
<td>5 years in 10</td>
<td>168</td>
<td>136</td>
</tr>
<tr>
<td>2 years in 10</td>
<td>188</td>
<td>151</td>
</tr>
<tr>
<td>1 year in 10</td>
<td>198</td>
<td>159</td>
</tr>
<tr>
<td>Recorded in the period 1951-78 at Battle Mountain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 years in 10</td>
<td>129</td>
<td>99</td>
</tr>
<tr>
<td>8 years in 10</td>
<td>137</td>
<td>109</td>
</tr>
<tr>
<td>5 years in 10</td>
<td>151</td>
<td>127</td>
</tr>
<tr>
<td>2 years in 10</td>
<td>165</td>
<td>146</td>
</tr>
<tr>
<td>1 year in 10</td>
<td>173</td>
<td>155</td>
</tr>
<tr>
<td>Recorded in the period 1965-78 at Central Field Laboratory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 years in 10</td>
<td>83</td>
<td>60</td>
</tr>
<tr>
<td>8 years in 10</td>
<td>95</td>
<td>71</td>
</tr>
<tr>
<td>5 years in 10</td>
<td>118</td>
<td>92</td>
</tr>
<tr>
<td>2 years in 10</td>
<td>141</td>
<td>113</td>
</tr>
<tr>
<td>1 year in 10</td>
<td>153</td>
<td>124</td>
</tr>
<tr>
<td>Map symbol</td>
<td>Soil name</td>
<td>Acres</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
<td>-------</td>
</tr>
<tr>
<td>120</td>
<td>Akerue-Simpark-Robson association</td>
<td>12,660</td>
</tr>
<tr>
<td>121</td>
<td>Akerue-Simpark-Punchbow association</td>
<td>7,920</td>
</tr>
<tr>
<td>141</td>
<td>Unsel-Wardenot-Belted association</td>
<td>8,275</td>
</tr>
<tr>
<td>142</td>
<td>Unsel-Caphor-Chedehap association</td>
<td>3,225</td>
</tr>
<tr>
<td>150</td>
<td>Chedehap-Enko-Ricert association</td>
<td>6,130</td>
</tr>
<tr>
<td>160</td>
<td>Batan association</td>
<td>1,800</td>
</tr>
<tr>
<td>161</td>
<td>Batan silt loam</td>
<td>1,470</td>
</tr>
<tr>
<td>162</td>
<td>Batan-Kelk association</td>
<td>4,485</td>
</tr>
<tr>
<td>163</td>
<td>Batan-Bubus-Ocala association</td>
<td>7,765</td>
</tr>
<tr>
<td>169</td>
<td>Batan-Ocala association</td>
<td>1,525</td>
</tr>
<tr>
<td>170</td>
<td>Beoska-Orovada association</td>
<td>3,275</td>
</tr>
<tr>
<td>171</td>
<td>Beoska silt loam, 2 to 4 percent slopes</td>
<td>4,255</td>
</tr>
<tr>
<td>172</td>
<td>Beoska-Tenabo complex</td>
<td>8,770</td>
</tr>
<tr>
<td>173</td>
<td>Beoska-Allor association</td>
<td>4,320</td>
</tr>
<tr>
<td>174</td>
<td>Beoska-Chiara association</td>
<td>1,165</td>
</tr>
<tr>
<td>175</td>
<td>Beoska-Whirlow-Misad association</td>
<td>965</td>
</tr>
<tr>
<td>177</td>
<td>Beoska-Dewar-Orovada association</td>
<td>4,150</td>
</tr>
<tr>
<td>180</td>
<td>Needle Peak-Batan-Yobe association</td>
<td>7,205</td>
</tr>
<tr>
<td>190</td>
<td>Wardenot-Sundown association</td>
<td>2,395</td>
</tr>
<tr>
<td>199</td>
<td>Wardenot-Laxal association</td>
<td>2,150</td>
</tr>
<tr>
<td>200</td>
<td>Izo-Misad association</td>
<td>11,765</td>
</tr>
<tr>
<td>201</td>
<td>Izo-Bubus association</td>
<td>1,545</td>
</tr>
<tr>
<td>210</td>
<td>Laxal association</td>
<td>20,480</td>
</tr>
<tr>
<td>211</td>
<td>Laxal gravelly fine sandy loam, occasionally flooded, 0 to 2 percent slopes</td>
<td>2,040</td>
</tr>
<tr>
<td>212</td>
<td>Laxal-Tomel association</td>
<td>3,040</td>
</tr>
<tr>
<td>220</td>
<td>Blackhawk very fine sandy loam, 2 to 8 percent slopes</td>
<td>1,335</td>
</tr>
<tr>
<td>221</td>
<td>Blackhawk-Tenabo-Desatoya Variant association</td>
<td>1,295</td>
</tr>
<tr>
<td>231</td>
<td>Broyles very fine sandy loam, 2 to 4 percent slopes</td>
<td>1,125</td>
</tr>
<tr>
<td>235</td>
<td>Broyles-Creemon association</td>
<td>1,765</td>
</tr>
<tr>
<td>236</td>
<td>Broyles association</td>
<td>2,860</td>
</tr>
<tr>
<td>237</td>
<td>Broyles-Beoska-Orovada association</td>
<td>7,935</td>
</tr>
<tr>
<td>239</td>
<td>Broyles-Tessfie-Perlor association</td>
<td>2,790</td>
</tr>
<tr>
<td>249</td>
<td>Bubus association</td>
<td>795</td>
</tr>
<tr>
<td>260</td>
<td>Umbreland-Wendane association</td>
<td>5,530</td>
</tr>
<tr>
<td>261</td>
<td>Umbreland-Wendane-Ocala association</td>
<td>5,795</td>
</tr>
<tr>
<td>262</td>
<td>Umbreland silt loam, frequently flooded, 0 to 2 percent slopes</td>
<td>545</td>
</tr>
<tr>
<td>270</td>
<td>Tomel-Laxal association</td>
<td>380</td>
</tr>
<tr>
<td>280</td>
<td>Chiera-Pillil association</td>
<td>5,770</td>
</tr>
<tr>
<td>284</td>
<td>Chiera-Dewar association</td>
<td>1,565</td>
</tr>
<tr>
<td>290</td>
<td>Creemon silt loam, 0 to 2 percent slopes</td>
<td>3,005</td>
</tr>
<tr>
<td>291</td>
<td>Creemon-Wholm association</td>
<td>12,460</td>
</tr>
<tr>
<td>295</td>
<td>Creemon-Cren association</td>
<td>4,150</td>
</tr>
<tr>
<td>296</td>
<td>Creemon-Hessing association</td>
<td>19,210</td>
</tr>
<tr>
<td>297</td>
<td>Creemon-Rasille-Tulase association</td>
<td>2,840</td>
</tr>
<tr>
<td>298</td>
<td>Creemon-Misad association</td>
<td>2,945</td>
</tr>
<tr>
<td>301</td>
<td>Creen-Ocala-Playas association</td>
<td>2,785</td>
</tr>
<tr>
<td>310</td>
<td>Yobe-Kawich-Plays association</td>
<td>1,810</td>
</tr>
<tr>
<td>320</td>
<td>Newpass-Jung association</td>
<td>16,625</td>
</tr>
<tr>
<td>321</td>
<td>Newpass-Old Camp association</td>
<td>16,625</td>
</tr>
<tr>
<td>360</td>
<td>Eastwell-Blackhawk-Pinevel association</td>
<td>3,785</td>
</tr>
<tr>
<td>404</td>
<td>Gleans-Gando association</td>
<td>890</td>
</tr>
<tr>
<td>411</td>
<td>Gund-Umbreland association</td>
<td>4,265</td>
</tr>
<tr>
<td>442</td>
<td>Gund-Bubus-Wendane association</td>
<td>1,245</td>
</tr>
<tr>
<td>444</td>
<td>Gund association</td>
<td>2,845</td>
</tr>
<tr>
<td>461</td>
<td>Happood-Packer-Layview association</td>
<td>15,200</td>
</tr>
<tr>
<td>463</td>
<td>Happood-Packer-Rubblie land association</td>
<td>1,245</td>
</tr>
<tr>
<td>465</td>
<td>Happood-Halacan-Hatur association</td>
<td>3,840</td>
</tr>
<tr>
<td>491</td>
<td>Enko-Orovada association, gently sloping</td>
<td>19,025</td>
</tr>
<tr>
<td>492</td>
<td>Enko-Glyphs association</td>
<td>7,780</td>
</tr>
<tr>
<td>493</td>
<td>Enko-Orovada association, nearly level</td>
<td>1,100</td>
</tr>
<tr>
<td>512</td>
<td>Heatho-Balee association</td>
<td>520</td>
</tr>
<tr>
<td>560</td>
<td>Jesse Camp silt loam</td>
<td>945</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Map symbol</th>
<th>Soil name</th>
<th>Acres</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>621</td>
<td>Loncan-Gando-Glean association</td>
<td>1,485</td>
<td>0.1</td>
</tr>
<tr>
<td>632</td>
<td>McConnel-Orovada-Misad association</td>
<td>7,285</td>
<td>0.5</td>
</tr>
<tr>
<td>633</td>
<td>McConnel-Rasille-Wholan association</td>
<td>42,315</td>
<td>2.7</td>
</tr>
<tr>
<td>635</td>
<td>McConnel-Rasille association</td>
<td>3,620</td>
<td>0.2</td>
</tr>
<tr>
<td>636</td>
<td>McConnel-Defier-Rasille association</td>
<td>2,325</td>
<td>0.1</td>
</tr>
<tr>
<td>637</td>
<td>McConnel-Orovada association</td>
<td>2,045</td>
<td>0.1</td>
</tr>
<tr>
<td>638</td>
<td>McConnel-Wholan association</td>
<td>4,220</td>
<td>0.3</td>
</tr>
<tr>
<td>670</td>
<td>Fillman-Pineval-Kingham association</td>
<td>4,070</td>
<td>0.3</td>
</tr>
<tr>
<td>674</td>
<td>Fillman-Buffaran association</td>
<td>4,505</td>
<td>0.3</td>
</tr>
<tr>
<td>675</td>
<td>Fillman-Buffaran-Orovada association</td>
<td>3,610</td>
<td>0.2</td>
</tr>
<tr>
<td>680</td>
<td>Skullwak-Upperland-Wendane association</td>
<td>1,780</td>
<td>0.1</td>
</tr>
<tr>
<td>683</td>
<td>Ocala-Sonoma-Paranat association</td>
<td>8,850</td>
<td>0.6</td>
</tr>
<tr>
<td>700</td>
<td>Orovada-Rasille-Wholan association</td>
<td>28,985</td>
<td>1.9</td>
</tr>
<tr>
<td>701</td>
<td>Orovada fine sandy loam, 2 to 4 percent slopes</td>
<td>1,975</td>
<td>0.1</td>
</tr>
<tr>
<td>702</td>
<td>Orovada-Cremon association</td>
<td>1,305</td>
<td>0.1</td>
</tr>
<tr>
<td>703</td>
<td>Orovada fine sandy loam, 0 to 2 percent slopes</td>
<td>885</td>
<td>0.1</td>
</tr>
<tr>
<td>704</td>
<td>Orovada-McConnel association</td>
<td>2,965</td>
<td>0.2</td>
</tr>
<tr>
<td>705</td>
<td>Orovada-Valmy association</td>
<td>2,100</td>
<td>0.1</td>
</tr>
<tr>
<td>740</td>
<td>Playas</td>
<td>14,655</td>
<td>0.9</td>
</tr>
<tr>
<td>751</td>
<td>Poorcal-Lopwash association</td>
<td>1,410</td>
<td>0.1</td>
</tr>
<tr>
<td>811</td>
<td>Ravenswood-Itca-Valpi association</td>
<td>1,790</td>
<td>0.1</td>
</tr>
<tr>
<td>812</td>
<td>Ravenswood-Shagnasty-Spike association</td>
<td>4,245</td>
<td>0.3</td>
</tr>
<tr>
<td>850</td>
<td>Relley silt loam, 0 to 2 percent slopes</td>
<td>995</td>
<td>0.1</td>
</tr>
<tr>
<td>854</td>
<td>Relley silt loam, frequently flooded, 0 to 2 percent slopes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>910</td>
<td>Rutab loam, 0 to 2 percent slopes</td>
<td>2,530</td>
<td>0.2</td>
</tr>
<tr>
<td>911</td>
<td>Shagnasty-Roca-Rock outcrop association</td>
<td>15,125</td>
<td>1.0</td>
</tr>
<tr>
<td>932</td>
<td>Shagnasty-Softscrabble association</td>
<td>9,045</td>
<td>0.6</td>
</tr>
<tr>
<td>942</td>
<td>Shipley silt loam, occasionally flooded, 0 to 2 percent slopes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>950</td>
<td>Silverado sandy loam, 0 to 2 percent slopes</td>
<td>1,325</td>
<td>0.1</td>
</tr>
<tr>
<td>990</td>
<td>Sonoma-Wendane association</td>
<td>3,840</td>
<td>0.3</td>
</tr>
<tr>
<td>998</td>
<td>Sonoma-Paranat association</td>
<td>8,430</td>
<td>0.5</td>
</tr>
<tr>
<td>999</td>
<td>Sonoma-Wendane-Paranat association</td>
<td>4,420</td>
<td>0.3</td>
</tr>
<tr>
<td>1011</td>
<td>Stampe-Mech-Canwah association</td>
<td>1,460</td>
<td>0.1</td>
</tr>
<tr>
<td>1041</td>
<td>Tenabo-Orovada-Wholan association</td>
<td>4,775</td>
<td>0.3</td>
</tr>
<tr>
<td>1042</td>
<td>Tenabo-Ricert-Desatoys association</td>
<td>2,045</td>
<td>0.1</td>
</tr>
<tr>
<td>1092</td>
<td>Tulase-Babus-McConnel association</td>
<td>2,900</td>
<td>0.2</td>
</tr>
<tr>
<td>1131</td>
<td>Fortank gravelly loam, 4 to 8 percent slopes</td>
<td>785</td>
<td>0.1</td>
</tr>
<tr>
<td>1140</td>
<td>Wendane silt loam, frequently flooded</td>
<td>10,726</td>
<td>0.7</td>
</tr>
<tr>
<td>1141</td>
<td>Wendane-Umberland association</td>
<td>4,070</td>
<td>0.3</td>
</tr>
<tr>
<td>1142</td>
<td>Wendane-Gund association</td>
<td>10,900</td>
<td>0.7</td>
</tr>
<tr>
<td>1143</td>
<td>Wendane silt loam, occasionally flooded</td>
<td>2,020</td>
<td>0.1</td>
</tr>
<tr>
<td>1145</td>
<td>Wendane-Playas association</td>
<td>1,810</td>
<td>0.1</td>
</tr>
<tr>
<td>1146</td>
<td>Wendane-Sonoma-Valmy association</td>
<td>9,115</td>
<td>0.6</td>
</tr>
<tr>
<td>1148</td>
<td>Wendane-Babus association</td>
<td>6,090</td>
<td>0.4</td>
</tr>
<tr>
<td>1169</td>
<td>Whirl-Broyles association</td>
<td>395</td>
<td>*</td>
</tr>
<tr>
<td>1173</td>
<td>Wholan silt loam, alkaline</td>
<td>1,420</td>
<td>0.1</td>
</tr>
<tr>
<td>1174</td>
<td>Wholan-Rasille association, alkaline</td>
<td>3,125</td>
<td>0.2</td>
</tr>
<tr>
<td>1178</td>
<td>Wholan-Rasille association, alkaline</td>
<td>17,740</td>
<td>1.1</td>
</tr>
<tr>
<td>1281</td>
<td>Ricert-Wholin-Pineval association</td>
<td>2,110</td>
<td>0.1</td>
</tr>
<tr>
<td>1282</td>
<td>Ricert-Broyles association</td>
<td>7,595</td>
<td>0.5</td>
</tr>
<tr>
<td>1284</td>
<td>Ricert-Zine-Broyles association</td>
<td>6,080</td>
<td>0.4</td>
</tr>
<tr>
<td>1283</td>
<td>Ricert-Babus-Broyles association</td>
<td>1,480</td>
<td>0.1</td>
</tr>
<tr>
<td>1286</td>
<td>Ricert-Tenabo-Broyles association</td>
<td>3,480</td>
<td>0.2</td>
</tr>
<tr>
<td>1287</td>
<td>Ricert-Orovada-Desatoys association</td>
<td>8,385</td>
<td>0.5</td>
</tr>
<tr>
<td>1288</td>
<td>Ricert-Orovada-Tenabo association</td>
<td>16,150</td>
<td>1.0</td>
</tr>
<tr>
<td>1289</td>
<td>Ricert-Blackhawk-Orovada association</td>
<td>6,140</td>
<td>0.4</td>
</tr>
<tr>
<td>1371</td>
<td>Chad-Gando-Softscrabble association</td>
<td>2,530</td>
<td>0.2</td>
</tr>
<tr>
<td>1450</td>
<td>Atlow-Stingborn association</td>
<td>1,480</td>
<td>0.1</td>
</tr>
<tr>
<td>1600</td>
<td>Bluffs and pits association</td>
<td>640</td>
<td>*</td>
</tr>
<tr>
<td>1670</td>
<td>Wieland-Rich association</td>
<td>8,915</td>
<td>0.6</td>
</tr>
<tr>
<td>1680</td>
<td>Zine gravelly loam, 2 to 8 percent slopes</td>
<td>2,040</td>
<td>0.1</td>
</tr>
<tr>
<td>1681</td>
<td>Zine-Charl-Wieland association</td>
<td>3,015</td>
<td>0.2</td>
</tr>
<tr>
<td>1682</td>
<td>Zine-Orovada association</td>
<td>8,425</td>
<td>0.5</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Map symbol</th>
<th>Soil name</th>
<th>Acres</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unius-Orovada association</td>
<td>5,640</td>
<td>0.4</td>
</tr>
<tr>
<td>2010</td>
<td>Glypha-Silverado association</td>
<td>2,170</td>
<td>0.1</td>
</tr>
<tr>
<td>2011</td>
<td>Glypha-Muni association</td>
<td>10,945</td>
<td>0.7</td>
</tr>
<tr>
<td>2012</td>
<td>Glypha-Muni-Orovada association</td>
<td>12,410</td>
<td>0.8</td>
</tr>
<tr>
<td>2015</td>
<td>Glypha-Enko association</td>
<td>5,090</td>
<td>0.3</td>
</tr>
<tr>
<td>2021</td>
<td>Rotinom-Wholan association</td>
<td>9,460</td>
<td>0.6</td>
</tr>
<tr>
<td>2022</td>
<td>Rotinom-Orovada association</td>
<td>5,260</td>
<td>0.3</td>
</tr>
<tr>
<td>2031</td>
<td>Muni-Orovada-Unius association</td>
<td>38,090</td>
<td>2.5</td>
</tr>
<tr>
<td>2060</td>
<td>Oxcirel-Beoska-Marilo association</td>
<td>6,180</td>
<td>0.4</td>
</tr>
<tr>
<td>2061</td>
<td>Oxcirel-Zalig-Grassval association</td>
<td>11,465</td>
<td>0.7</td>
</tr>
<tr>
<td>2063</td>
<td>Oxcirel-Pineal association</td>
<td>4,105</td>
<td>0.3</td>
</tr>
<tr>
<td>2069</td>
<td>Oxcirel-Wieland-Spasprey association</td>
<td>4,515</td>
<td>0.3</td>
</tr>
<tr>
<td>2081</td>
<td>Fenster-Jesse Camp association*</td>
<td>275</td>
<td>*</td>
</tr>
<tr>
<td>2088</td>
<td>Punchbowl-Jung-Teguro association</td>
<td>2,570</td>
<td>0.2</td>
</tr>
<tr>
<td>2089</td>
<td>Punchbowl-Jung-Locane association</td>
<td>11,405</td>
<td>0.7</td>
</tr>
<tr>
<td>2090</td>
<td>Punchbowl-gravelly association as 15 percent slopes</td>
<td>2,050</td>
<td>0.1</td>
</tr>
<tr>
<td>2091</td>
<td>Punchbowl-Teguro-Sumine association</td>
<td>10,480</td>
<td>0.7</td>
</tr>
<tr>
<td>2092</td>
<td>Punchbowl-Belate-Relutant association</td>
<td>2,125</td>
<td>0.1</td>
</tr>
<tr>
<td>2093</td>
<td>Punchbowl-Rock outcrop association</td>
<td>9,520</td>
<td>0.6</td>
</tr>
<tr>
<td>2094</td>
<td>Punchbowl-Simpark-Akerue association</td>
<td>13,220</td>
<td>0.9</td>
</tr>
<tr>
<td>2095</td>
<td>Punchbowl-Robson-Rock outcrop association</td>
<td>2,775</td>
<td>0.2</td>
</tr>
<tr>
<td>2096</td>
<td>Punchbowl-Locane-Whirlo association</td>
<td>9,525</td>
<td>0.6</td>
</tr>
<tr>
<td>2097</td>
<td>Punchbowl-Itca association</td>
<td>5,725</td>
<td>0.4</td>
</tr>
<tr>
<td>2099</td>
<td>Punchbowl-Roca-Rock outcrop association</td>
<td>890</td>
<td>0.1</td>
</tr>
<tr>
<td>2100</td>
<td>Grassval-Grina-Unsel Variant association</td>
<td>1,665</td>
<td>0.1</td>
</tr>
<tr>
<td>2101</td>
<td>Grassval-Oxcirel association</td>
<td>12,020</td>
<td>0.8</td>
</tr>
<tr>
<td>2102</td>
<td>Grassval-Wieland association</td>
<td>1,120</td>
<td>0.1</td>
</tr>
<tr>
<td>2104</td>
<td>Grassval-Punchbowl association</td>
<td>8,025</td>
<td>0.5</td>
</tr>
<tr>
<td>2105</td>
<td>Grassval-Grina-Muni association</td>
<td>8,940</td>
<td>0.6</td>
</tr>
<tr>
<td>2110</td>
<td>Isoe-Davey association*</td>
<td>625</td>
<td>*</td>
</tr>
<tr>
<td>2540</td>
<td>Buffaran-Wieland association</td>
<td>5,075</td>
<td>0.3</td>
</tr>
<tr>
<td>2541</td>
<td>Buffaran-Zoesta association</td>
<td>2,030</td>
<td>0.1</td>
</tr>
<tr>
<td>2542</td>
<td>Buffaran-Chlara association</td>
<td>20,795</td>
<td>1.3</td>
</tr>
<tr>
<td>2543</td>
<td>Buffaran-Spasprey-Allor association</td>
<td>17,795</td>
<td>1.1</td>
</tr>
<tr>
<td>2545</td>
<td>Buffaran-Pineal association</td>
<td>1,250</td>
<td>0.1</td>
</tr>
<tr>
<td>2546</td>
<td>Buffaran-Spasprey-Locane association</td>
<td>3,055</td>
<td>0.2</td>
</tr>
<tr>
<td>2547</td>
<td>Buffaran-Desatoya association</td>
<td>4,710</td>
<td>0.3</td>
</tr>
<tr>
<td>2548</td>
<td>Buffaran-Tenabo-Pineal association</td>
<td>5,495</td>
<td>0.4</td>
</tr>
<tr>
<td>2554</td>
<td>Laped-Hoople-Osoll association</td>
<td>5,730</td>
<td>0.4</td>
</tr>
<tr>
<td>2555</td>
<td>Laped-Colbar association</td>
<td>4,575</td>
<td>0.3</td>
</tr>
<tr>
<td>2570</td>
<td>Colbar-Atlow-Burrra association</td>
<td>3,565</td>
<td>0.2</td>
</tr>
<tr>
<td>2603</td>
<td>Grina-Genaw association</td>
<td>1,360</td>
<td>0.1</td>
</tr>
<tr>
<td>2640</td>
<td>Rasile-Kelk association</td>
<td>885</td>
<td>0.1</td>
</tr>
<tr>
<td>2672</td>
<td>Zoesta Variant-Jung-Trunk association</td>
<td>3,035</td>
<td>0.2</td>
</tr>
<tr>
<td>2681</td>
<td>Tessfive-Puet-Grina association</td>
<td>4,735</td>
<td>0.3</td>
</tr>
<tr>
<td>2683</td>
<td>Tessfive-Genaw-Orovada association</td>
<td>4,230</td>
<td>0.3</td>
</tr>
<tr>
<td>2684</td>
<td>Tessfive-Perloor-Orovada association</td>
<td>3,700</td>
<td>0.2</td>
</tr>
<tr>
<td>2690</td>
<td>Itca Variant-Relutant-Handy association</td>
<td>2,390</td>
<td>0.2</td>
</tr>
<tr>
<td>2730</td>
<td>Pula-Spike-Buffaran association</td>
<td>3,840</td>
<td>0.2</td>
</tr>
<tr>
<td>2731</td>
<td>Pula-Spike association</td>
<td>2,505</td>
<td>0.2</td>
</tr>
<tr>
<td>2740</td>
<td>Spike-Desatoya Variant-Grassval association</td>
<td>5,745</td>
<td>0.4</td>
</tr>
<tr>
<td>2771</td>
<td>Kram-Hopeka-Rock outcrop association</td>
<td>1,215</td>
<td>0.1</td>
</tr>
<tr>
<td>2780</td>
<td>Desatoya-Tenabo-Pineal association</td>
<td>2,045</td>
<td>0.1</td>
</tr>
<tr>
<td>2781</td>
<td>Desatoya-Orovada association</td>
<td>9,325</td>
<td>0.6</td>
</tr>
<tr>
<td>2782</td>
<td>Desatoya-Pineval-Grassval association</td>
<td>7,460</td>
<td>0.5</td>
</tr>
<tr>
<td>2783</td>
<td>Desatoya-Spike association</td>
<td>3,290</td>
<td>0.2</td>
</tr>
<tr>
<td>2791</td>
<td>Old Camp-Colbar-Rock outcrop association</td>
<td>4,015</td>
<td>0.3</td>
</tr>
<tr>
<td>2792</td>
<td>Old Camp-Allor-Puet association</td>
<td>3,840</td>
<td>0.2</td>
</tr>
<tr>
<td>2793</td>
<td>Old Camp-Enko association</td>
<td>2,045</td>
<td>0.1</td>
</tr>
<tr>
<td>2797</td>
<td>Old Camp-Atlow-Osoll association</td>
<td>15,855</td>
<td>1.0</td>
</tr>
<tr>
<td>2798</td>
<td>Old Camp-Atlow-Osoll association</td>
<td>1,670</td>
<td>0.1</td>
</tr>
<tr>
<td>3001</td>
<td>Barrier-Kobeh association</td>
<td>4,940</td>
<td>0.3</td>
</tr>
<tr>
<td>3011</td>
<td>Defler-Orovada association</td>
<td>2,250</td>
<td>0.1</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Map symbol</th>
<th>Soil name</th>
<th>Acres</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>3050</td>
<td>Novacan cobbly loam, 2 to 8 percent slopes---</td>
<td>2,635</td>
<td>0.2</td>
</tr>
<tr>
<td>3071</td>
<td>Allor-Wieland association---------------------</td>
<td>14,650</td>
<td>0.9</td>
</tr>
<tr>
<td>3072</td>
<td>Allor-Groven association, moderately sloping-</td>
<td>11,585</td>
<td>0.7</td>
</tr>
<tr>
<td>3073</td>
<td>Allor-Kelk association------------------------</td>
<td>2,285</td>
<td>0.1</td>
</tr>
<tr>
<td>3074</td>
<td>Allor-Orovada association, nearly level-------</td>
<td>2,190</td>
<td>0.1</td>
</tr>
<tr>
<td>3080</td>
<td>Zaidy-Ricert association----------------------</td>
<td>3,450</td>
<td>0.2</td>
</tr>
<tr>
<td>3081</td>
<td>Zaidy-Allor association-----------------------</td>
<td>5,435</td>
<td>0.3</td>
</tr>
<tr>
<td>3091</td>
<td>Packer-Newlands association--------------------</td>
<td>1,350</td>
<td>0.1</td>
</tr>
<tr>
<td>3092</td>
<td>Packer-Hapgood-Rock outcrop association--------</td>
<td>2,040</td>
<td>0.1</td>
</tr>
<tr>
<td>3093</td>
<td>Packer-Layview-Hapgood association--------------</td>
<td>7,810</td>
<td>0.5</td>
</tr>
<tr>
<td>3094</td>
<td>Packer-Hapgood-Torro association---------------</td>
<td>10,290</td>
<td>0.7</td>
</tr>
<tr>
<td>3101</td>
<td>Hackwood-Newlands-Hapgood association----------</td>
<td>1,025</td>
<td>0.1</td>
</tr>
<tr>
<td>3111</td>
<td>Ninemile-Zoesta-Ica association----------------</td>
<td>3,515</td>
<td>0.2</td>
</tr>
<tr>
<td>3120</td>
<td>Wati-Softscranble-Chad association--------------</td>
<td>3,265</td>
<td>0.2</td>
</tr>
<tr>
<td>3121</td>
<td>Wati-Softscranble-Robson association-----------</td>
<td>4,320</td>
<td>0.3</td>
</tr>
<tr>
<td>3122</td>
<td>Wati-Sumine-Softscranble association-----------</td>
<td>10,365</td>
<td>0.6</td>
</tr>
<tr>
<td>3123</td>
<td>Wati-Softscranble-Ica association---------------</td>
<td>5,325</td>
<td>0.3</td>
</tr>
<tr>
<td>3125</td>
<td>Wati-Softscranble-Robson association-----------</td>
<td>800</td>
<td>0.1</td>
</tr>
<tr>
<td>3130</td>
<td>Icra-Clanapine-Relucan association--------------</td>
<td>9,435</td>
<td>0.6</td>
</tr>
<tr>
<td>3131</td>
<td>Icra-Ninemile-Rock outcrop association---------</td>
<td>3,380</td>
<td>0.2</td>
</tr>
<tr>
<td>3132</td>
<td>Torro-Softscranble-Land-Cleavage association---</td>
<td>2,675</td>
<td>0.2</td>
</tr>
<tr>
<td>3134</td>
<td>Torro-Clanapine-Torro association---------------</td>
<td>18,670</td>
<td>1.2</td>
</tr>
<tr>
<td>3135</td>
<td>Icra-Clanapine-Rock outcrop association--------</td>
<td>4,295</td>
<td>0.3</td>
</tr>
<tr>
<td>3136</td>
<td>Icra-Roca-Relucan association-----------------</td>
<td>21,745</td>
<td>1.4</td>
</tr>
<tr>
<td>3137</td>
<td>Icra-Relucan-Wati association-----------------</td>
<td>6,625</td>
<td>0.4</td>
</tr>
<tr>
<td>3140</td>
<td>Sochouse-Tenabo-Desatoya Variant association---</td>
<td>1,940</td>
<td>0.1</td>
</tr>
<tr>
<td>3151</td>
<td>Robson-Ninemile-Ravenwood association----------</td>
<td>4,755</td>
<td>0.3</td>
</tr>
<tr>
<td>3153</td>
<td>Robson-Locane-Softscranble association---------</td>
<td>4,970</td>
<td>0.3</td>
</tr>
<tr>
<td>3154</td>
<td>Robson-Locane-Rock outcrop association---------</td>
<td>3,555</td>
<td>0.2</td>
</tr>
<tr>
<td>3155</td>
<td>Robson-Itca-Softscranble association-----------</td>
<td>3,530</td>
<td>0.2</td>
</tr>
<tr>
<td>3170</td>
<td>Teguro-Rbble land-Punchbowl association--------</td>
<td>2,275</td>
<td>0.1</td>
</tr>
<tr>
<td>3181</td>
<td>Newlands-Packer-Hapgood association, moderately steep-</td>
<td>6,495</td>
<td>0.4</td>
</tr>
<tr>
<td>3182</td>
<td>Newlands-Packer-Hapgood association, strongly sloping-</td>
<td>3,330</td>
<td>0.2</td>
</tr>
<tr>
<td>3190</td>
<td>Softscranble-Clanapine-Wati association--------</td>
<td>12,080</td>
<td>0.8</td>
</tr>
<tr>
<td>3192</td>
<td>Softscranble-Wati-Cleavage association---------</td>
<td>2,315</td>
<td>0.1</td>
</tr>
<tr>
<td>3200</td>
<td>Dewar gravelly loam, 2 to 8 percent slopes-----</td>
<td>5,880</td>
<td>0.4</td>
</tr>
<tr>
<td>3210</td>
<td>Typlic Argixerolls-Torrapsammentic Haploxerolls-Clean association</td>
<td>1,200</td>
<td>0.1</td>
</tr>
<tr>
<td>3231</td>
<td>Stingdorn-Hoopleite association----------------</td>
<td>3,595</td>
<td>0.2</td>
</tr>
<tr>
<td>3251</td>
<td>Caphor-Tenabo-SPassprey association------------</td>
<td>2,130</td>
<td>0.1</td>
</tr>
<tr>
<td>3252</td>
<td>Caphor-Itca-Relucan association----------------</td>
<td>9,280</td>
<td>0.6</td>
</tr>
<tr>
<td>3253</td>
<td>Caphor association-----------------------------</td>
<td>5,665</td>
<td>0.4</td>
</tr>
<tr>
<td>3270</td>
<td>Koyen fine sandy loam, 2 to 4 percent slopes---</td>
<td>340</td>
<td>*</td>
</tr>
<tr>
<td>3310</td>
<td>Spassprey-Allor association-------------------</td>
<td>12,205</td>
<td>0.8</td>
</tr>
<tr>
<td>3312</td>
<td>Spassprey-Buffaran-Orvalada association--------</td>
<td>3,665</td>
<td>0.2</td>
</tr>
<tr>
<td>3314</td>
<td>Spassprey-Allor-Orvalada association------------</td>
<td>5,100</td>
<td>0.3</td>
</tr>
<tr>
<td>3342</td>
<td>Halcan-Hapgood-Granzen association--------------</td>
<td>1,425</td>
<td>0.1</td>
</tr>
<tr>
<td>3411</td>
<td>Zoesta-Robson-Softscranble association---------</td>
<td>12,560</td>
<td>0.8</td>
</tr>
<tr>
<td>3415</td>
<td>Zoesta-Handy association----------------------</td>
<td>2,710</td>
<td>0.2</td>
</tr>
<tr>
<td>3417</td>
<td>Zoesta-Roca-Softscranble association-----------</td>
<td>1,830</td>
<td>0.1</td>
</tr>
<tr>
<td>3421</td>
<td>Belate-Softscranble-Torro association---------</td>
<td>14,860</td>
<td>1.0</td>
</tr>
<tr>
<td>3422</td>
<td>Belate-Rock outcrop association----------------</td>
<td>2,450</td>
<td>0.2</td>
</tr>
<tr>
<td>3423</td>
<td>Belate-Cleavage-Softscranble association-------</td>
<td>9,345</td>
<td>0.6</td>
</tr>
<tr>
<td>3450</td>
<td>Relucan-Robson-Cleavage association------------</td>
<td>2,885</td>
<td>0.2</td>
</tr>
<tr>
<td>3453</td>
<td>Relucan-Locane-Itca association-----------------</td>
<td>15,785</td>
<td>1.0</td>
</tr>
<tr>
<td>3455</td>
<td>Relucan-Roca-Colbar association----------------</td>
<td>1,820</td>
<td>0.1</td>
</tr>
<tr>
<td>3457</td>
<td>Relucan-Clanapine-Roca association--------------</td>
<td>2,440</td>
<td>0.2</td>
</tr>
<tr>
<td>3461</td>
<td>Torro-Relucan-Cleavage association--------------</td>
<td>1,535</td>
<td>0.1</td>
</tr>
<tr>
<td>3462</td>
<td>Torro-Clanapine-Torro association----------------</td>
<td>2,835</td>
<td>0.2</td>
</tr>
<tr>
<td>3463</td>
<td>Torro-Clanapine-Itca association----------------</td>
<td>1,605</td>
<td>0.1</td>
</tr>
<tr>
<td>3464</td>
<td>Torro-Itca-Softscranble association------------</td>
<td>7,420</td>
<td>0.5</td>
</tr>
<tr>
<td>3465</td>
<td>Torro-Clanapine-Softscranble association-------</td>
<td>4,195</td>
<td>0.3</td>
</tr>
<tr>
<td>3562</td>
<td>Locane-Cortez-Punchbowl association-------------</td>
<td>14,370</td>
<td>0.9</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Map symbol</th>
<th>Soil name</th>
<th>Acres</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>3563</td>
<td>Locane-Muni association</td>
<td>4,565</td>
<td>0.3</td>
</tr>
<tr>
<td>3625</td>
<td>Minat-Coztur-Belate association</td>
<td>1,585</td>
<td>0.1</td>
</tr>
<tr>
<td>3690</td>
<td>Izod-Koyal-Rock outcrop association</td>
<td>1,400</td>
<td>0.1</td>
</tr>
<tr>
<td>3740</td>
<td>Kelk silt loam, saline</td>
<td>1,480</td>
<td>0.1</td>
</tr>
<tr>
<td>3741</td>
<td>Kelk-Settlemeier association</td>
<td>3,540</td>
<td>0.2</td>
</tr>
<tr>
<td>3742</td>
<td>Kelk-Ocala association</td>
<td>4,450</td>
<td>0.3</td>
</tr>
<tr>
<td>3840</td>
<td>Jung-Newpass association</td>
<td>14,670</td>
<td>0.9</td>
</tr>
<tr>
<td>3841</td>
<td>Jung-Ica-Roca association</td>
<td>14,260</td>
<td>0.9</td>
</tr>
<tr>
<td>3842</td>
<td>Jung-Hooplite association</td>
<td>7,460</td>
<td>0.5</td>
</tr>
<tr>
<td>3843</td>
<td>Jung-Newpass-Teguro association</td>
<td>4,115</td>
<td>0.3</td>
</tr>
<tr>
<td>3845</td>
<td>Jung-Stingdorn-Atlow association</td>
<td>3,605</td>
<td>0.2</td>
</tr>
<tr>
<td>3846</td>
<td>Jung-Atlow-McVegas association</td>
<td>5,935</td>
<td>0.4</td>
</tr>
<tr>
<td>3847</td>
<td>Jung-Old Camp-Canalpine association</td>
<td>2,945</td>
<td>0.2</td>
</tr>
<tr>
<td>3848</td>
<td>Jung-McVegas-Enko association</td>
<td>4,710</td>
<td>0.3</td>
</tr>
<tr>
<td>3851</td>
<td>Decram-Hapgood association</td>
<td>3,605</td>
<td>0.2</td>
</tr>
<tr>
<td>3852</td>
<td>Decram-Hapgood-Chat association</td>
<td>4,930</td>
<td>0.3</td>
</tr>
<tr>
<td>3861</td>
<td>Duco-Ica-Roca association</td>
<td>1,080</td>
<td>0.1</td>
</tr>
<tr>
<td>3863</td>
<td>Duco-Canalpine-Jung association</td>
<td>2,095</td>
<td>0.1</td>
</tr>
<tr>
<td>3891</td>
<td>Labshaft-Hapgood-Rock outcrop association</td>
<td>1,790</td>
<td>0.1</td>
</tr>
<tr>
<td>3950</td>
<td>Hooplite-Jung-Izod association</td>
<td>3,000</td>
<td>0.2</td>
</tr>
<tr>
<td>3951</td>
<td>Hooplite-Old Camp-Puett association</td>
<td>1,345</td>
<td>0.1</td>
</tr>
<tr>
<td>3952</td>
<td>Hooplite-Stingdorn association</td>
<td>5,650</td>
<td>0.4</td>
</tr>
<tr>
<td>3960</td>
<td>Pineval gravelly loam, 2 to 4 percent slopes</td>
<td>1,130</td>
<td>0.1</td>
</tr>
<tr>
<td>3961</td>
<td>Pineval-Orovada-Beoksa association</td>
<td>4,420</td>
<td>0.3</td>
</tr>
<tr>
<td>3964</td>
<td>Pineval-Orovada association</td>
<td>17,190</td>
<td>1.1</td>
</tr>
<tr>
<td>3990</td>
<td>Suttlemeier fine sandy loam, drained, 0 to 2 percent slopes</td>
<td>975</td>
<td>0.1</td>
</tr>
<tr>
<td>3991</td>
<td>Suttlemeier-Pineval association</td>
<td>3,340</td>
<td>0.2</td>
</tr>
<tr>
<td>3992</td>
<td>Suttlemeier complex</td>
<td>1,185</td>
<td>0.1</td>
</tr>
<tr>
<td>4041</td>
<td>Hymas-Xine-Atella association</td>
<td>9,255</td>
<td>0.6</td>
</tr>
<tr>
<td>4070</td>
<td>Genaw-Wieland-Grina association</td>
<td>2,125</td>
<td>0.1</td>
</tr>
<tr>
<td>4072</td>
<td>Genaw-Orovada-Puett association</td>
<td>3,153</td>
<td>0.2</td>
</tr>
<tr>
<td>4073</td>
<td>Genaw-Broyles-Perlot association</td>
<td>3,060</td>
<td>0.2</td>
</tr>
<tr>
<td>4140</td>
<td>Welch loam, drained, 2 to 8 percent slopes</td>
<td>1,825</td>
<td>0.1</td>
</tr>
</tbody>
</table>

| Total     |                                                   | 1,554,671 | 100.0 |

* Less than 0.1 percent.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>120*:</td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akerue--------------------</td>
<td>0-3</td>
<td>Very stony loam</td>
<td>SM-SC A-4</td>
<td>30-40</td>
<td>75-80</td>
<td>55-65</td>
<td>50-60</td>
</tr>
<tr>
<td></td>
<td>15-21</td>
<td>Indurated------</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>21-25</td>
<td>Unweathered</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>18-22</td>
<td>Indurated------</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Unweathered</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Robson-------------------</td>
<td>0-2</td>
<td>Very cobbly loam</td>
<td>GM-GC, GC, SC A-2</td>
<td>30-50</td>
<td>55-75</td>
<td>50-65</td>
<td>30-50</td>
</tr>
<tr>
<td></td>
<td>2-5</td>
<td>Very cobbly clay</td>
<td>GC A-7</td>
<td>30-45</td>
<td>55-75</td>
<td>50-60</td>
<td>40-60</td>
</tr>
<tr>
<td></td>
<td>5-15</td>
<td>Very cobbly clay</td>
<td>GC, GM A-7</td>
<td>50-80</td>
<td>60-70</td>
<td>50-60</td>
<td>40-55</td>
</tr>
<tr>
<td></td>
<td>15-19</td>
<td>Unweathered</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>121*:</td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akerue--------------------</td>
<td>0-3</td>
<td>Very cobbly loam</td>
<td>SM-SC A-4</td>
<td>30-40</td>
<td>75-80</td>
<td>55-65</td>
<td>50-60</td>
</tr>
<tr>
<td></td>
<td>15-21</td>
<td>Indurated------</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>21-25</td>
<td>Unweathered</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>18-22</td>
<td>Indurated------</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Unweathered</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Punchbowl-----------------</td>
<td>0-3</td>
<td>Gravely loam----</td>
<td>SM A-2, A-4</td>
<td>5-10</td>
<td>65-85</td>
<td>60-75</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>3-7</td>
<td>Gravely loam----</td>
<td>SC, GC, CL A-6</td>
<td>0-5</td>
<td>70-100</td>
<td>65-95</td>
<td>60-85</td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>Gravely clay</td>
<td>GC A-6, A-7</td>
<td>0-5</td>
<td>55-65</td>
<td>50-60</td>
<td>45-55</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Unweathered</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragment</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt;3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>141*: Unselt--------------</td>
<td>0-8</td>
<td>gravelly fine</td>
<td>SM-SC, A-2</td>
<td></td>
<td>75-85</td>
<td>55-75</td>
<td>40-60</td>
</tr>
<tr>
<td></td>
<td>8-18</td>
<td>gravelly clay</td>
<td>SC, A-6</td>
<td>0</td>
<td>75-85</td>
<td>55-75</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>18-31</td>
<td>gravelly sandy</td>
<td>SM-SC, A-2</td>
<td>0</td>
<td>60-75</td>
<td>50-70</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>31-60</td>
<td>very gravelly</td>
<td>GP-GM, GP, A-1</td>
<td>0</td>
<td>40-50</td>
<td>20-35</td>
<td>10-25</td>
</tr>
<tr>
<td>142*: Unselt--------------</td>
<td>0-8</td>
<td>gravelly fine</td>
<td>SM-SC, A-2</td>
<td></td>
<td>75-85</td>
<td>55-75</td>
<td>40-60</td>
</tr>
<tr>
<td></td>
<td>8-18</td>
<td>gravelly clay</td>
<td>SC, A-6</td>
<td>0</td>
<td>75-85</td>
<td>55-75</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>18-31</td>
<td>gravelly sandy</td>
<td>SM-SC, A-2</td>
<td>0</td>
<td>60-75</td>
<td>50-70</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>31-60</td>
<td>very gravelly</td>
<td>GP-GM, GP, A-1</td>
<td>0</td>
<td>40-50</td>
<td>20-35</td>
<td>10-25</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5-12</td>
<td>Sandy loam, coarse sandy loam</td>
<td>SM</td>
<td>A-1, A-2</td>
<td>0-5</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>37-60</td>
<td>Coarse sand, loamy coarse sand</td>
<td>SM</td>
<td>A-1</td>
<td>0-5</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>5-12</td>
<td>Sandy loam, coarse sandy loam</td>
<td>SM</td>
<td>A-1, A-2</td>
<td>0-5</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>37-60</td>
<td>Coarse sand, loamy coarse sand</td>
<td>SM</td>
<td>A-1</td>
<td>0-5</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Enko---------------------</td>
<td>0-6</td>
<td>Gravelly fine sandy loam</td>
<td>SM-SC</td>
<td>A-2</td>
<td>0</td>
<td>60-80</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>6-12</td>
<td>Loam, sandy loam</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-100</td>
</tr>
<tr>
<td></td>
<td>12-18</td>
<td>Loam, fine sandy loam, sandy loam</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-100</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Loam, fine sandy loam, sandy loam</td>
<td>SM-SC, CL-ML</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>75-100</td>
</tr>
<tr>
<td>Ricert--------------------</td>
<td>0-6</td>
<td>Gravelly fine sandy loam</td>
<td>SM, SM-SC</td>
<td>A-2, A-4</td>
<td>0</td>
<td>65-80</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>6-18</td>
<td>Loam, clay loam</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand</td>
<td>GM, GP-GM</td>
<td>A-1</td>
<td>0-15</td>
<td>30-60</td>
<td>20-50</td>
</tr>
<tr>
<td>160*: Batan--------------</td>
<td>0-5</td>
<td>Silt loam------</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>5-68</td>
<td>Stratified silt loam to silty clay loam</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Batan, slightly saline---</td>
<td>0-5</td>
<td>Silt loam------</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>5-68</td>
<td>Stratified silt loam to silty clay</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

See footnote at end of table.
### TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

<table>
<thead>
<tr>
<th>Soil name and</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt; 0.03 inches</td>
<td>4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>161-----------</td>
<td>0-5</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Batan</td>
<td>5-68</td>
<td>Stratified silt clay loam</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>162*;</td>
<td>0-5</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Batan</td>
<td>5-68</td>
<td>Stratified silt clay loam</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Kelk, saline--</td>
<td>0-3</td>
<td>Silt loam----</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>1-20</td>
<td>Silt loam----</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td>20-40</td>
<td>Silt loam----</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td>40-60</td>
<td>Silt loam----</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td>Kelk, occasionally flooded--</td>
<td>0-14</td>
<td>Silt loam----</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td>14-51</td>
<td>Silt loam----</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td>51-60</td>
<td>Silt loam----</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>90-100</td>
</tr>
<tr>
<td>168*;</td>
<td>0-5</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Batan</td>
<td>5-68</td>
<td>Stratified silt clay loam</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Bubus----------</td>
<td>0-6</td>
<td>Very fine sandy loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>85-95</td>
<td>75-90</td>
</tr>
<tr>
<td>6-60</td>
<td>Stratified sandy loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>80-90</td>
</tr>
<tr>
<td>Ocala----------</td>
<td>0-4</td>
<td>Silt loam----</td>
<td>ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>4-36</td>
<td>Silt loam, silty clay loam</td>
<td>ML, CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td>36-60</td>
<td>Silt loam, silty clay loam</td>
<td>ML, CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>95-100</td>
<td>90-95</td>
</tr>
<tr>
<td>169*;</td>
<td>0-5</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Batan</td>
<td>5-68</td>
<td>Stratified silt clay loam</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Ocala, occasionally flooded--</td>
<td>0-4</td>
<td>Silty clay loam</td>
<td>CL, ML</td>
<td>A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>4-36</td>
<td>Silty clay loam</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td>36-60</td>
<td>Silty clay loam</td>
<td>ML, CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>90-100</td>
<td>90-95</td>
</tr>
<tr>
<td>Ocala, rarely flooded--</td>
<td>0-6</td>
<td>Silty clay loam</td>
<td>CL, ML</td>
<td>A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>6-13</td>
<td>Silty clay loam</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td>13-60</td>
<td>Silty clay loam</td>
<td>ML, CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>90-100</td>
<td>90-95</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Frac. &gt; sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASH70</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13-24</td>
<td>Silt loam, silty clay loam.</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>80-100</td>
</tr>
<tr>
<td></td>
<td>24-55</td>
<td>Stratified gravelly very fine sandy loam to gravelly sandy loam.</td>
<td>GM, SM</td>
<td>A-1, A-2</td>
<td>0-10</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>55-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.</td>
<td>GM</td>
<td>A-1</td>
<td>0-15</td>
<td>30-55</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
</tr>
<tr>
<td></td>
<td>20-60</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
</tr>
<tr>
<td>171---------------------</td>
<td>0-13</td>
<td>Silt loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>85-95</td>
</tr>
<tr>
<td>Beoska-----------------</td>
<td>13-24</td>
<td>Silt loam, silty clay loam.</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>80-100</td>
</tr>
<tr>
<td></td>
<td>24-55</td>
<td>Stratified gravelly very fine sandy loam to gravelly sandy loam.</td>
<td>GM, SM</td>
<td>A-1, A-2</td>
<td>0-10</td>
<td>55-80</td>
</tr>
<tr>
<td></td>
<td>55-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.</td>
<td>GM</td>
<td>A-1</td>
<td>0-15</td>
<td>30-55</td>
</tr>
<tr>
<td>172*; Beoska------------</td>
<td>0-13</td>
<td>Silt loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>13-24</td>
<td>Silt loam, silty clay loam.</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>80-100</td>
</tr>
<tr>
<td></td>
<td>24-55</td>
<td>Stratified gravelly very fine sandy loam to gravelly sandy loam.</td>
<td>GM, SM</td>
<td>A-1, A-2</td>
<td>0-10</td>
<td>55-80</td>
</tr>
<tr>
<td></td>
<td>55-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.</td>
<td>GM</td>
<td>A-1</td>
<td>0-15</td>
<td>30-55</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>172*: Tenabo—</td>
<td>0-13</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>13-20</td>
<td>Clay loam, silty clay loam, gravelly clay loam</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>95-100</td>
<td>70-90</td>
</tr>
<tr>
<td></td>
<td>20-39</td>
<td>Indurated-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>39-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly coarse sand</td>
<td>GP-GM, GM A-1</td>
<td>5-25</td>
<td>40-60</td>
<td>35-55</td>
<td>25-35</td>
</tr>
<tr>
<td>173*:</td>
<td>0-13</td>
<td>Very fine sandy loam</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>85-95</td>
<td>75-95</td>
</tr>
<tr>
<td>Beoska--------</td>
<td>13-24</td>
<td>Silt loam, silty clay loam, clay loam</td>
<td>CL A-6, A-7</td>
<td>0</td>
<td>80-100</td>
<td>75-100</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td>24-55</td>
<td>Stratified gravelly very fine sandy loam to gravelly sandy loam</td>
<td>GM, SM A-1, A-2</td>
<td>0-10</td>
<td>55-80</td>
<td>50-75</td>
<td>50-75</td>
</tr>
<tr>
<td>Allor----------</td>
<td>0-12</td>
<td>Gravelly loam----</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>5-10</td>
<td>70-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>12-34</td>
<td>Gravelly clay loam, gravelly sandy clay loam</td>
<td>SC A-6, A-7</td>
<td>0-10</td>
<td>70-85</td>
<td>55-75</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td>34-60</td>
<td>Gravelly loamy sand, very gravelly loamy sand</td>
<td>SM A-1</td>
<td>0-10</td>
<td>55-75</td>
<td>45-65</td>
<td>30-50</td>
</tr>
<tr>
<td>174*: Beoska---</td>
<td>0-13</td>
<td>Silt loam------</td>
<td>ML A-4</td>
<td>0</td>
<td>85-95</td>
<td>75-85</td>
<td>70-80</td>
</tr>
<tr>
<td></td>
<td>13-24</td>
<td>Silt loam, silty clay loam, clay loam</td>
<td>CL A-6, A-7</td>
<td>0</td>
<td>80-100</td>
<td>75-100</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td>24-55</td>
<td>Stratified gravelly very fine sandy loam to gravelly sandy loam</td>
<td>GM, SM A-1, A-2</td>
<td>0-10</td>
<td>55-80</td>
<td>50-75</td>
<td>50-75</td>
</tr>
</tbody>
</table>

See footnote at end of table.
### TABLE 5.—ENGINEERING INDEX PROPERTIES—Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragment percentages (sieve number)</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td></td>
</tr>
<tr>
<td>174*: Chiara------------</td>
<td>0-5</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>5-16</td>
<td>Very fine sandy loam, loam, silt loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>16-20</td>
<td>Indurated-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>175*: Bescak----------</td>
<td>0-13</td>
<td>Very fine sandy loam.</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>13-24</td>
<td>Silt loam, silty clay loam, clay loam.</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>80-100</td>
</tr>
<tr>
<td></td>
<td>24-55</td>
<td>Stratified gravelly very fine sandy loam to gravelly sandy loam.</td>
<td>GM, SM</td>
<td>A-1, A-2</td>
<td>0-10</td>
<td>55-80</td>
</tr>
<tr>
<td>Whirl-------------------</td>
<td>0-12</td>
<td>Silt loam.-----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>80-95</td>
</tr>
<tr>
<td></td>
<td>24-60</td>
<td>Stratified very gravelly loamy to extremely gravelly coarse sandy loam.</td>
<td>GW-GM, GP-GM</td>
<td>A-1</td>
<td>0-5</td>
<td>40-50</td>
</tr>
<tr>
<td>31-60</td>
<td>Stratified very gravelly loamy sand to extremely gravelly coarse sand.</td>
<td>GP-GM</td>
<td>A-1</td>
<td>5-10</td>
<td>40-55</td>
<td>20-40</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>Inches 4 10 40 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beoska</td>
<td>0-13</td>
<td>Very fine sandy loam.</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0 85-95 75-95 70-80 45-65 15-25</td>
<td>NP-5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13-24</td>
<td>Silt loam, silty clay loam, clay loam.</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0 80-100 75-100 70-85 60-85 35-45 15-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>24-55</td>
<td>Stratified gravelly very fine sandy loam to gravelly sandy loam.</td>
<td>GM, SM</td>
<td>A-1, A-2</td>
<td>0-10 55-80 50-75 30-50 20-35 15-25</td>
<td>NP-5</td>
<td></td>
</tr>
<tr>
<td>Dewar</td>
<td>0-4</td>
<td>Gravelly loam.</td>
<td>GC, CL, SC</td>
<td>A-6</td>
<td>0-5 60-90 55-80 45-80 35-70 25-35</td>
<td>10-15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-14</td>
<td>Gravelly silty clay loam, gravelly clay loam.</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>0-10 65-90 60-85 55-80 45-75 35-45</td>
<td>15-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14-50</td>
<td>Indurated</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Grovada</td>
<td>0-8</td>
<td>Gravelly very fine sandy loam.</td>
<td>GM, SM</td>
<td>A-2, A-4</td>
<td>0 60-80 55-75 45-70 30-50 15-25</td>
<td>NP-5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam, loam, very fine sandy loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0 75-100 75-95 60-85 40-70 20-30</td>
<td>NP-5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20-60</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0 75-100 75-95 60-85 35-55 20-30</td>
<td>NP-5</td>
<td></td>
</tr>
<tr>
<td>180*: Needle Peak</td>
<td>0-8</td>
<td>Silt loam.</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0 100 100 95-100 80-90 30-45</td>
<td>10-15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-60</td>
<td>Silt loam, silty clay loam.</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0 100 100 95-100 80-95 30-50</td>
<td>10-20</td>
<td></td>
</tr>
<tr>
<td>Batan</td>
<td>0-5</td>
<td>Silt loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100 95-100 85-95 30-35</td>
<td>5-10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-68</td>
<td>Stratified silt loam to silty clay loam.</td>
<td>CL</td>
<td>A-6</td>
<td>0 100 100 95-100 85-95 30-40</td>
<td>15-25</td>
<td></td>
</tr>
<tr>
<td>Yobe</td>
<td>0-16</td>
<td>Silt loam.</td>
<td>ML</td>
<td>A-4, A-6</td>
<td>0 100 95-100 95-100 75-90 30-40</td>
<td>5-15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16-60</td>
<td>Silty clay loam, silt loam.</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0 100 95-100 95-100 85-90 30-50</td>
<td>10-20</td>
<td></td>
</tr>
<tr>
<td>190*: Wardenot</td>
<td>0-5</td>
<td>Gravelly fine sandy loam.</td>
<td>SM</td>
<td>A-1, A-2</td>
<td>0 60-80 50-75 40-60 20-40 20-25</td>
<td>NP-5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-60</td>
<td>Stratified very gravelly fine sandy loam to extremely cobbley loamy sand.</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>10-40 25-50 20-45 15-40 5-15</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td>Sundown</td>
<td>0-7</td>
<td>Fine sand.</td>
<td>SM, SP-SM</td>
<td>A-2, A-3</td>
<td>0 95-100 85-100 80-90 5-20</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td>7-60</td>
<td>Loamy fine sand</td>
<td>SM</td>
<td>A-2</td>
<td>0-5 95-100 85-100 75-85 15-30</td>
<td>---</td>
<td>NP</td>
</tr>
</tbody>
</table>

See footnote at end of table.
| Soil name and | Depth | USDA texture | Classification | Fragments | Percentage passing | Liquid limit | Plasticity index |
| map symbol | | | | Unified | sieve number (inches) | | |
| | | | | AASHTO | | | |
| | m | | | | | | |
| | 5-60 | Stratified very gravelly fine sandy loam to extremely cobbly loamy sand. | GP-GM, GM | A-1 | 10-40 | 25-50 | 20-45 | 15-40 | 5-15 | NP |
| | 10-60 | Stratified gravelly loam to very gravelly sand. | GP-GM, GM | A-1 | 0-10 | 35-55 | 30-50 | 20-40 | 5-15 | NP |
| | 5-60 | Stratified very gravelly fine sandy loam to extremely cobbly loamy sand. | GP-GM, GM | A-1 | 10-40 | 25-50 | 20-45 | 15-40 | 5-15 | NP |
| | 2-60 | Stratified gravelly loamy coarse sand to extremely gravelly coarse sand. | GP, GP-GM | A-1 | 0-15 | 20-40 | 15-35 | 10-20 | 0-10 | NP |
| | 31-60 | Stratified very gravelly loamy sand to extremely gravelly coarse sand. | GP-GM | A-1 | 5-10 | 40-55 | 20-40 | 5-10 | --- | NP |
| | 2-60 | Stratified gravelly loamy coarse sand to extremely gravelly coarse sand. | GP, GP-GM | A-1 | 0-15 | 20-40 | 15-35 | 10-20 | 0-10 | --- | NP |

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-60</td>
<td></td>
<td></td>
<td>ML A-4</td>
<td>0</td>
<td>95-100 90-100 80-90 50-60</td>
<td>25-30</td>
<td>NP-5</td>
</tr>
<tr>
<td>Laxal, occasionally flooded</td>
<td>0-10</td>
<td></td>
<td>GM-GC, GM A-1, A-2</td>
<td>5-10</td>
<td>45-60 35-50 30-40 10-25</td>
<td>15-25</td>
<td>NP-10</td>
</tr>
<tr>
<td>10-60</td>
<td></td>
<td></td>
<td>GP-GM, GM A-1</td>
<td>0-10</td>
<td>35-55 30-50 25-40 5-15</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td>10-60</td>
<td></td>
<td></td>
<td>GP-GM, GM A-1</td>
<td>0-10</td>
<td>35-55 30-50 20-40 5-15</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td>Tomel-------------------</td>
<td>0-4</td>
<td></td>
<td>GM-GC, SM-SC A-2, A-4</td>
<td>0</td>
<td>55-60 50-75 40-65 15-40</td>
<td>20-25</td>
<td>5-10</td>
</tr>
<tr>
<td>4-18</td>
<td></td>
<td></td>
<td>GC A-2, A-6</td>
<td>0</td>
<td>40-60 35-50 25-45 25-45</td>
<td>30-40</td>
<td>10-20</td>
</tr>
<tr>
<td>18-33 Indurated----------</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>33-60</td>
<td></td>
<td></td>
<td>GP A-1</td>
<td>0</td>
<td>20-40 15-35 10-20 0-5</td>
<td>---</td>
<td>NP</td>
</tr>
</tbody>
</table>

See footnote at end of table.
### TABLE 5.—ENGINEERING INDEX PROPERTIES—Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fracments</th>
<th>Percentage passing sieve number—</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&gt; 3 inches 4</td>
<td>10 40 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>212*: Laxal, occasionally flooded—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-60</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-10</td>
<td>35-55 30-50 20-40 5-15</td>
<td></td>
<td>NP</td>
</tr>
<tr>
<td>220—Blackhawk—</td>
<td>0-8</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100 95-100 85-95 65-75</td>
<td></td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td>8-14</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100 95-100 85-95 70-80</td>
<td>30-35</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>14-17</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>--- --- --- ---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>17-38</td>
<td>SM</td>
<td>A-1, A-2</td>
<td>0</td>
<td>75-90 70-85 35-50 10-30</td>
<td></td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td>38-60</td>
<td>GP-GM, SP</td>
<td>A-1</td>
<td>0</td>
<td>45-60 20-50 10-35 0-10</td>
<td></td>
<td>NP</td>
</tr>
<tr>
<td>221*: Blackhawk—</td>
<td>0-8</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100 95-100 85-95 65-75</td>
<td></td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td>8-14</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100 95-100 85-95 70-80</td>
<td>30-35</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>14-17</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>--- --- --- ---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>17-38</td>
<td>SM</td>
<td>A-1, A-2</td>
<td>0</td>
<td>75-90 70-85 35-50 10-30</td>
<td></td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td>38-60</td>
<td>GP-GM, SP</td>
<td>A-1</td>
<td>0</td>
<td>45-60 20-50 10-35 0-10</td>
<td></td>
<td>NP</td>
</tr>
<tr>
<td>222—Tenabo—</td>
<td>0-4</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100 90-100 85-95 75-85</td>
<td>25-35</td>
<td>NP-10</td>
</tr>
<tr>
<td></td>
<td>4-15</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>95-100 70-95 60-90 50-85</td>
<td>30-40</td>
<td>15-25</td>
</tr>
<tr>
<td></td>
<td>15-28</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>--- --- --- ---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>28-60</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>5-25</td>
<td>40-60 35-55 25-35 5-20</td>
<td></td>
<td>NP</td>
</tr>
</tbody>
</table>

See footnote at end of table.
## TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>0</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pot</td>
<td>Pot</td>
<td>Pot</td>
<td>Pot</td>
<td>Pot</td>
</tr>
<tr>
<td>221*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desatoya Variant</td>
<td>0-3</td>
<td>Very gravelly sandy loam.</td>
<td>GM-GC A-2</td>
<td>0</td>
<td>45-60</td>
<td>35-50</td>
<td>25-40</td>
</tr>
<tr>
<td>3-13</td>
<td>Gravelly clay loam, gravelly sandy clay loam.</td>
<td>SC, CL A-6, A-7</td>
<td>0</td>
<td>70-85</td>
<td>55-70</td>
<td>45-60</td>
<td>40-55</td>
</tr>
<tr>
<td>231----------------------</td>
<td></td>
<td>Very fine sandy loam.</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Broyles</td>
<td>0-11</td>
<td>Stratified loam to gravelly loamy sand.</td>
<td>SM A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
<td>30-40</td>
</tr>
<tr>
<td>11-60</td>
<td>Stratified loam to gravelly loamy sand.</td>
<td>SM A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
<td>30-40</td>
<td>25-35</td>
</tr>
<tr>
<td>235*:</td>
<td></td>
<td></td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Broyles</td>
<td>0-11</td>
<td>Stratified loam to gravelly loamy sand.</td>
<td>SM A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
<td>30-40</td>
</tr>
<tr>
<td>11-60</td>
<td>Stratified loam to gravelly loamy sand.</td>
<td>SM A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
<td>30-40</td>
<td>25-35</td>
</tr>
<tr>
<td>Creemom---</td>
<td>0-7</td>
<td>Silt loam---------------------</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td>7-18</td>
<td>Very fine sandy loam, silt loam.</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
<td>85-90</td>
</tr>
<tr>
<td>18-60</td>
<td>Stratified very fine sandy loam to silt loam.</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
<td>85-90</td>
</tr>
<tr>
<td>236*:</td>
<td></td>
<td></td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Broyles</td>
<td>0-13</td>
<td>Very fine sandy loam.</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>13-60</td>
<td>Stratified loam to gravelly loamy sand.</td>
<td>SM A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
<td>30-40</td>
<td>25-35</td>
</tr>
<tr>
<td>Broyles, moderately saline</td>
<td>0-5</td>
<td>Very fine sandy loam.</td>
<td>ML A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
<td>85-100</td>
</tr>
<tr>
<td>5-11</td>
<td>Silt loam, very fine sandy loam.</td>
<td>ML, SM A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>75-90</td>
<td>40-55</td>
</tr>
<tr>
<td>11-60</td>
<td>Stratified loam to gravelly loamy sand.</td>
<td>SM A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
<td>30-40</td>
<td>25-35</td>
</tr>
<tr>
<td>237*:</td>
<td></td>
<td></td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Broyles</td>
<td>0-11</td>
<td>Very fine sandy loam.</td>
<td>SM A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
<td>30-40</td>
</tr>
<tr>
<td>11-60</td>
<td>Stratified loam to gravelly loamy sand.</td>
<td>SM A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
<td>30-40</td>
<td>25-35</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>[Depth]</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td><strong>237</strong>: Beoka----------</td>
<td>0-13</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>85-95</td>
<td>75-95</td>
<td>70-80</td>
</tr>
<tr>
<td></td>
<td>13-24</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>(80-100)</td>
<td>75-100</td>
<td>70-85</td>
</tr>
<tr>
<td><strong>Orovada</strong>-------------</td>
<td>0-8</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>20-60</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
<td>60-80</td>
</tr>
<tr>
<td><strong>239</strong>: Broyles--------</td>
<td>0-13</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>13-60</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
<td>30-40</td>
</tr>
<tr>
<td><strong>Tessfive</strong>------------</td>
<td>0-6</td>
<td>SM-SC</td>
<td>A-4</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>6-16</td>
<td>GM-SC</td>
<td>A-4, A-1</td>
<td>0-5</td>
<td>55-80</td>
<td>50-70</td>
<td>35-60</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Perlor</strong>--------------</td>
<td>0-7</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0-5</td>
<td>85-100</td>
<td>80-100</td>
<td>70-90</td>
</tr>
<tr>
<td></td>
<td>7-14</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0-5</td>
<td>75-100</td>
<td>70-95</td>
<td>50-80</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>249</strong>: Bubus, slightly saline</td>
<td>0-6</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>85-95</td>
<td>75-90</td>
<td>70-80</td>
</tr>
<tr>
<td></td>
<td>6-60</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>80-90</td>
</tr>
<tr>
<td><strong>Bubus</strong>---------------</td>
<td>0-6</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>85-95</td>
<td>75-90</td>
<td>70-80</td>
</tr>
<tr>
<td></td>
<td>6-60</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>80-90</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>inches 4 10 40 200</td>
<td>Pot</td>
<td>Pot</td>
<td></td>
</tr>
<tr>
<td>260*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Umberland</td>
<td>0-11</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100</td>
<td>95-100</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>Silt loam----</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0 100 100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Wendanee</td>
<td>0-7</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100</td>
<td>90-100</td>
<td>70-95</td>
</tr>
<tr>
<td></td>
<td>7-18</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100</td>
<td>95-100</td>
<td>70-80</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Stratified silt loam to clay loam.</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0 100 100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>261*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Umberland</td>
<td>0-7</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100</td>
<td>95-100</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>7-60</td>
<td>Silt loam----</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0 100 100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Wendanee</td>
<td>0-7</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100</td>
<td>90-100</td>
<td>70-95</td>
</tr>
<tr>
<td></td>
<td>7-18</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100</td>
<td>95-100</td>
<td>70-80</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Stratified silt loam to clay loam.</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0 100 100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Ocala</td>
<td>0-4</td>
<td>Silt loam----</td>
<td>ML, CL</td>
<td>A-4, A-6</td>
<td>0 100 100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>4-16</td>
<td>Silt loam----</td>
<td>ML, CL</td>
<td>A-6, A-7</td>
<td>0 100 100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>16-60</td>
<td>Silt loam----</td>
<td>ML, CL</td>
<td>A-6, A-7</td>
<td>0 90-100</td>
<td>90-100</td>
<td>90-95</td>
</tr>
<tr>
<td>262----------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Umberland</td>
<td>0-7</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100</td>
<td>95-100</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>7-60</td>
<td>Silt loam----</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0 100 100</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td>270*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomel</td>
<td>0-3</td>
<td>Very gravelly sandy loam.</td>
<td>GM</td>
<td>A-1</td>
<td>0</td>
<td>35-60</td>
<td>25-50</td>
</tr>
<tr>
<td></td>
<td>3-12</td>
<td>Very gravelly clay loam, very gravelly sandy clay loam.</td>
<td>GC</td>
<td>A-2</td>
<td>0</td>
<td>40-60</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>12-27</td>
<td>Indurated-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Very gravelly sand, extremely gravelly sand.</td>
<td>GP</td>
<td>A-1</td>
<td>0-5</td>
<td>20-40</td>
<td>15-35</td>
</tr>
<tr>
<td>Laxal</td>
<td>0-10</td>
<td>Gravelly loam----</td>
<td>GM</td>
<td>A-2, A-4</td>
<td>0-5</td>
<td>60-70</td>
<td>50-60</td>
</tr>
<tr>
<td></td>
<td>10-60</td>
<td>Stratified very gravelly sandy loam to very gravelly loamy coarse sand.</td>
<td>GM</td>
<td>A-1</td>
<td>0-15</td>
<td>35-45</td>
<td>30-40</td>
</tr>
<tr>
<td>280*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chiara</td>
<td>0-5</td>
<td>Gravelly loam----</td>
<td>SM</td>
<td>A-4</td>
<td>0-5</td>
<td>70-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>5-16</td>
<td>Very fine sandy loam, silt loam, loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>16-20</td>
<td>Indurated-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHO sieve number</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 in. 4 in. 10 in.</td>
<td>40 200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7-12</td>
<td>Gravelly silt</td>
<td>GM-GC, SC, A-4, A-6</td>
<td>0-5</td>
<td>65-80 15-50 45-60 35-50</td>
<td>20-35</td>
<td>5-20</td>
</tr>
<tr>
<td></td>
<td>12-33</td>
<td>Clay, silty clay</td>
<td>CL, CH, A-7</td>
<td>0</td>
<td>80-100 70-90 65-85 60-80</td>
<td>40-55</td>
<td>25-35</td>
</tr>
<tr>
<td></td>
<td>33-60</td>
<td>Cemented-----</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>5-16</td>
<td>Very fine sandy</td>
<td>ML, A-4</td>
<td>0</td>
<td>95-100 95-100 95-100 75-85</td>
<td>15-25</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>16-20</td>
<td>Indurated-----</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Dewar--------------------</td>
<td>0-4</td>
<td>Gravelly loam</td>
<td>GC, SC, A-6</td>
<td>0-5</td>
<td>60-90 55-60 45-80 35-70</td>
<td>25-35</td>
<td>10-15</td>
</tr>
<tr>
<td></td>
<td>4-14</td>
<td>Gravelly silty</td>
<td>GC, CL, A-6, A-7</td>
<td>0-10</td>
<td>65-90 60-80 55-80 45-75</td>
<td>25-45</td>
<td>15-20</td>
</tr>
<tr>
<td></td>
<td>14-50</td>
<td>Intordurated</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>290---------------------</td>
<td>0-10</td>
<td>Silt loam-----</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td>Creemon</td>
<td>10-15</td>
<td>Very fine sandy</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>25-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>15-60</td>
<td>Stratified very</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>25-30</td>
<td>NP-5</td>
</tr>
<tr>
<td>291*: Creemon------------</td>
<td>0-10</td>
<td>Silt loam-----</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td>10-15</td>
<td>Very fine sandy</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>25-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>15-60</td>
<td>Stratified very</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>25-30</td>
<td>NP-5</td>
</tr>
<tr>
<td>Wholan------------------</td>
<td>0-13</td>
<td>Silt loam-----</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>20-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>13-60</td>
<td>Very fine sandy</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 75-90</td>
<td>20-30</td>
<td>NP-5</td>
</tr>
<tr>
<td>Wholan, alkaline--------</td>
<td>0-13</td>
<td>Silt loam-----</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>20-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>13-60</td>
<td>Very fine sandy</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 75-90</td>
<td>20-30</td>
<td>NP-5</td>
</tr>
<tr>
<td>295*: Creemon------------</td>
<td>0-10</td>
<td>Silt loam-----</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td>10-15</td>
<td>Very fine sandy</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>25-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>15-60</td>
<td>Stratified very</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>25-30</td>
<td>NP-5</td>
</tr>
<tr>
<td>Cren-------------------</td>
<td>0-7</td>
<td>Silt loam-----</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>25-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>7-26</td>
<td>Silt loam-----</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>25-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>26-60</td>
<td>Stratified fine</td>
<td>ML, A-4</td>
<td>0</td>
<td>100 100 100 95-100 85-90</td>
<td>25-30</td>
<td>NP-5</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
</tr>
<tr>
<td>Creemon</td>
<td>0-10</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>10-15</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>15-60</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td>Hesing</td>
<td>0-4</td>
<td>CL-ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>4-11</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>11-18</td>
<td>CL-ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>30-60</td>
<td>GP-GM</td>
<td>A-1</td>
<td>0</td>
<td>35-45</td>
<td>20-35</td>
<td>35-45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GW-GM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Creemon                   | 0-10  | ML           | A-4            | 0         | 100  | 100        | 95-100 | 85-90 | --- | NP             |              |                 |
|                          | 10-15 | ML           | A-4            | 0         | 100  | 100        | 95-100 | 85-90 | 25-30 | NP-5           |              |                 |
|                          | 15-60 | ML           | A-4            | 0         | 100  | 100        | 95-100 | 85-90 | 25-30 | NP-5           |              |                 |
| Rassile                   | 0-6   | ML           | A-4            | 0         | 100  | 100        | 95-100 | 60-80 | 15-25 | NP-5           |              |                 |
|                          | 6-15  | ML           | A-4            | 0         | 100  | 100        | 95-100 | 75-100 | 20-30 | NP-5           |              |                 |
|                          | 15-60 | ML           | A-4            | 0         | 100  | 100        | 95-100 | 75-100 | 20-30 | NP-5           |              |                 |
| Tulsasi                   | 0-6   | ML, CL-ML    | A-4            | 0         | 100  | 100        | 95-100 | 60-70 | 15-25 | NP-10          |              |                 |
|                          | 6-60  | CL-ML, ML    | A-4            | 0         | 100  | 100        | 95-100 | 70-85 | 15-25 | NP-10          |              |                 |
| Creemon                   | 0-10  | ML           | A-4            | 0         | 100  | 100        | 95-100 | 85-90 | --- | NP             |              |                 |
|                          | 10-15 | ML           | A-4            | 0         | 100  | 100        | 95-100 | 85-90 | 25-30 | NP-5           |              |                 |
|                          | 15-45 | ML           | A-4            | 0         | 100  | 100        | 95-100 | 85-90 | 25-30 | NP-5           |              |                 |
|                          | 45-60 | SM           | A-4            | 0         | 80-90 | 70-85     | 60-70  | 55-85  | 35-50 | ---            |              |                 |

See footnote at end of table.
### TABLE 5.—ENGINEERING INDEX PROPERTIES—Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches 4 10 40 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>31-60</td>
<td>Stratified very gravelly loamy sand to extremely gravelly coarse sand.</td>
<td>GP-GM</td>
<td>A-1</td>
<td>5-10 40-55 20-40 10-30 5-10</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td>Cren</td>
<td>0-7</td>
<td>Silt loam-----</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100 95-100 85-90 75-90</td>
<td>25-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>7-26</td>
<td>Silt loam-----</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100 95-100 85-90 75-90</td>
<td>25-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>26-60</td>
<td>Silt loam---- -</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100 95-100 80-90 60-90</td>
<td>15-25</td>
<td>NP-5</td>
</tr>
<tr>
<td>Ocala</td>
<td>0-4</td>
<td>Silt loam-----</td>
<td>ML, CL</td>
<td>A-4, A-6</td>
<td>0 100 100 95-100 85-95 80-90</td>
<td>30-40</td>
<td>5-15</td>
</tr>
<tr>
<td></td>
<td>4-16</td>
<td>Silt loam, silty clay loam.</td>
<td>ML, CL</td>
<td>A-6, A-7</td>
<td>0 100 100 95-100 85-95 80-90</td>
<td>30-50</td>
<td>10-20</td>
</tr>
<tr>
<td></td>
<td>16-60</td>
<td>Silt loam, silty clay loam.</td>
<td>ML, CL</td>
<td>A-6, A-7</td>
<td>0 100 100 90-100 90-100 90-95 85-90 75-90 75-90</td>
<td>30-50</td>
<td>10-20</td>
</tr>
<tr>
<td>Playas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yobe</td>
<td>0-16</td>
<td>Silt loam-----</td>
<td>ML</td>
<td>A-4, A-6</td>
<td>0 100 95-100 95-100 85-90 75-90</td>
<td>30-40</td>
<td>5-15</td>
</tr>
<tr>
<td></td>
<td>16-60</td>
<td>Silty clay loam, silt loam.</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0 100 95-100 95-100 85-90 75-90</td>
<td>30-50</td>
<td>10-20</td>
</tr>
<tr>
<td>Kawich</td>
<td>0-4</td>
<td>Fine sand------</td>
<td>SM</td>
<td>A-2</td>
<td>0 100 100 75-90 75-90 75-90</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td>4-60</td>
<td>Fine sand------</td>
<td>SM</td>
<td>A-2</td>
<td>0 100 100 75-90 75-90 75-90</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td>Playas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-14</td>
<td>Clay------------</td>
<td>CH</td>
<td>A-7</td>
<td>0-5 60-80 60-80 80-90 95-90 75-90</td>
<td>50-65</td>
<td>25-35</td>
</tr>
<tr>
<td></td>
<td>14-24</td>
<td>Very cobbly silty clay, very gravelly clay, gravelly clay.</td>
<td>CH</td>
<td>A-7</td>
<td>15-50 70-85 55-75 50-70 50-70 50-70</td>
<td>50-65</td>
<td>25-35</td>
</tr>
<tr>
<td></td>
<td>24-26</td>
<td>Cemented-------</td>
<td></td>
<td></td>
<td>--- --- --- --- --- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td>--- --- --- --- --- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Jung</td>
<td>0-8</td>
<td>Very cobbly loam</td>
<td>GM-GC, SM-SC</td>
<td>A-4</td>
<td>35-50 65-80 60-65 45-60 35-50</td>
<td>25-30</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td>8-19</td>
<td>Very cobbly clay loam, very cobbly clay, very gravelly clay loam.</td>
<td>GC</td>
<td>A-7</td>
<td>15-40 55-65 50-60 40-50 35-45</td>
<td>40-55</td>
<td>20-30</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td>--- --- --- --- --- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Frac. Percentages</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Newpass--------------------</td>
<td>4-14</td>
<td>Clay------------------------</td>
<td>CH</td>
<td>A-7</td>
<td>0-5</td>
<td>85-100</td>
<td>80-95</td>
</tr>
<tr>
<td>14-24</td>
<td>Very cobbly silty clay, very gravelly clay, gravelly clay.</td>
<td>CH</td>
<td>A-7</td>
<td>15-50</td>
<td>70-85</td>
<td>55-75</td>
<td>50-70</td>
</tr>
<tr>
<td>24-26</td>
<td>Cemented-----------------</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>26</td>
<td>Unweathered bedrock.</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Old Camp, strongly sloping------</td>
<td>0-2</td>
<td>Gravelly loam------</td>
<td>SM-SC</td>
<td>A-4</td>
<td>0-5</td>
<td>70-85</td>
<td>60-75</td>
</tr>
<tr>
<td>11-15</td>
<td>Unweathered bedrock.</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>11-15</td>
<td>Unweathered bedrock.</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>360*:</td>
<td>0-5</td>
<td>Gravelly loam------</td>
<td>SM, ML, GM</td>
<td>A-4</td>
<td>0-5</td>
<td>65-80</td>
<td>60-75</td>
</tr>
<tr>
<td>15-17</td>
<td>Cemented-----------------</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Blackhawk--------------------</td>
<td>0-3</td>
<td>Very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td>3-14</td>
<td>Silt loam, very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>14-30</td>
<td>Cemented-----------------</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>30-48</td>
<td>Stratified loam to gravelly coarse sand.</td>
<td>SM</td>
<td>A-1, A-2</td>
<td>0</td>
<td>75-90</td>
<td>70-85</td>
<td>35-50</td>
</tr>
<tr>
<td>48-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly coarse sand.</td>
<td>GP-GM, SP</td>
<td>A-1</td>
<td>0</td>
<td>45-60</td>
<td>20-50</td>
<td>10-35</td>
</tr>
</tbody>
</table>

See footnote at the end of the table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
</tr>
<tr>
<td>360*: Pineval-----------</td>
<td>0-5</td>
<td>[Gravelly loam----]</td>
<td>CL-ML, GM-GC</td>
<td>A-4</td>
<td>0</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>5-11</td>
<td>Very gravelly clay loam, very gravelly loam, sandy clay loam.</td>
<td>GC</td>
<td>A-2</td>
<td>0</td>
<td>35-60</td>
<td>25-50</td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly sand.</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-25</td>
<td>30-60</td>
<td>20-50</td>
</tr>
<tr>
<td></td>
<td>51</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>10-14</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>441*: Gund------------</td>
<td>0-4</td>
<td>Silt loam-------</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>4-23</td>
<td>Silt loam-------</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>23-60</td>
<td>Silty clay, clay</td>
<td>CH</td>
<td>A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Ummberland-------------</td>
<td>0-7</td>
<td>Silt loam-------</td>
<td>CL, CH</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>7-60</td>
<td>Silty clay loam, silty clay, clay.</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>442*: Gund------------</td>
<td>0-4</td>
<td>Silt loam-------</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>4-23</td>
<td>Silt loam-------</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>23-60</td>
<td>Silty clay, clay</td>
<td>CH</td>
<td>A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Bubus------------------</td>
<td>0-6</td>
<td>Very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>85-95</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>6-60</td>
<td>Stratified sandy loam to silt loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>442* Wendane</td>
<td>0-7</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>7-18</td>
<td>Silt loam, very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Stratified silt loam to clay loam.</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>443* Gund</td>
<td>0-4</td>
<td>Silt loam-----</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>4-23</td>
<td>Silt loam-----</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>23-60</td>
<td>Silty clay, clay</td>
<td>CH</td>
<td>A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>444* Batan</td>
<td>0-5</td>
<td>Silt loam-----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>5-68</td>
<td>Stratified silt loam to silty clay loam.</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>461* Gund, drained</td>
<td>0-4</td>
<td>Silt loam-----</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>4-23</td>
<td>Silt loam-----</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>23-60</td>
<td>Silty clay, clay</td>
<td>CH</td>
<td>A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>461* Hopgood</td>
<td>0-17</td>
<td>Very gravelly loam.</td>
<td>GM-GC</td>
<td>A-2</td>
<td>5-10</td>
<td>50-60</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam, extremely cobbly loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and</th>
<th>[Depth]</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
<td>40</td>
</tr>
</tbody>
</table>

463*:
Hapgood--------
0-17 Gravelly loam----SM-SC | A-4 | 5-10 | 70-80 | 60-75 | 55-70 | 35-50 | 25-30 | 5-10

Packer--------
sandy loam, extremely cobbly loam, very cobbly loam.

Rubble land.

465*:
Hapgood--------
0-17 Gravelly loam----SM-SC | A-4 | 5-10 | 70-80 | 60-75 | 55-70 | 35-50 | 25-30 | 5-10

Halacan-------
loam.
channery loam, very channery loam.
17 Unweathered --- --- --- --- --- --- --- ---
bedrock.

Hatur---------
loam.
gravelly loam, extremely gravelly sandy loam.
29-33 Unweathered --- --- --- --- --- --- --- ---
bedrock.

491*:
Enko---------
0-6 Sandy loam-------SM-SC | A-4 | 0 | 95-100 | 85-100 | 60-75 | 35-50 | 20-30 | 5-10
6-12 Loam, sandy loam, SM-SC, A-4 | 0 | 95-100 | 85-100 | 60-90 | 35-70 | 20-30 | 5-10
fine sandy loam. | CL-ML | 12-18 Sandy loam, fine SM-SC, A-4 | 0 | 95-100 | 85-100 | 75-90 | 40-65 | 20-25 | 5-10
sandy loam, CL-ML | 18-60 Sandy loam, fine CL-SC, A-2, A-4 | 0 | 85-100 | 75-100 | 60-90 | 30-65 | 20-25 | 5-10
sandy loam, CL-ML | 18-60 Sandy loam, fine CL-SC, A-2, A-4 | 0 | 85-100 | 75-100 | 60-90 | 30-65 | 20-25 | 5-10
sandy loam, CL-ML |

See footnote at end of table.
### TABLE 5.—ENGINEERING INDEX PROPERTIES—Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number—</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In</td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Orovada---</td>
<td>0-8</td>
<td>Fine sandy loam</td>
<td>SM, A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam, loam.</td>
<td>SM, ML A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>SM, ML A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
<td>60-85</td>
</tr>
<tr>
<td>Enko----------</td>
<td>0-14</td>
<td>Sandy loam-----</td>
<td>SM, ML A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
<td>50-80</td>
</tr>
<tr>
<td></td>
<td>14-53</td>
<td>Loam, fine sandy loam, sandy loam.</td>
<td>CL-ML, SC, ML A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
<td>50-90</td>
</tr>
<tr>
<td></td>
<td>53-63</td>
<td>Very gravelly loamy sand, very gravelly sand, extremely gravelly sand.</td>
<td>GP-GM, SP-GM, SP-SM A-1</td>
<td>0</td>
<td>30-55</td>
<td>20-45</td>
<td>15-25</td>
</tr>
<tr>
<td>Glyphs----------</td>
<td>0-7</td>
<td>Fine sandy loam</td>
<td>CL-ML, SM-SC A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-95</td>
<td>75-85</td>
</tr>
<tr>
<td></td>
<td>7-17</td>
<td>Gravelly sandy clay loam, gravelly clay loam.</td>
<td>CL, SC A-6, A-7</td>
<td>0</td>
<td>80-90</td>
<td>60-75</td>
<td>55-65</td>
</tr>
<tr>
<td></td>
<td>37-60</td>
<td>Very gravelly coarse sand.</td>
<td>GP, GP-GM, SP, SP-SM A-1</td>
<td>0</td>
<td>40-65</td>
<td>35-45</td>
<td>15-25</td>
</tr>
<tr>
<td>Enko----------</td>
<td>0-6</td>
<td>Sandy loam-----</td>
<td>SM-SC A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-100</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>6-12</td>
<td>Loam, sandy loam.</td>
<td>SM-SC, CL-ML A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-100</td>
<td>60-90</td>
</tr>
<tr>
<td></td>
<td>12-18</td>
<td>Sandy loam, fine sandy loam.</td>
<td>SM-SC, CL-ML A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-100</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Sandy loam, fine sandy loam.</td>
<td>SM-SC, CL-ML A-2, A-4</td>
<td>0</td>
<td>85-100</td>
<td>75-100</td>
<td>60-90</td>
</tr>
<tr>
<td>Orovada-----</td>
<td>0-8</td>
<td>Fine sandy loam</td>
<td>SM A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam, loam.</td>
<td>SM, ML A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>SM, ML A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
<td>60-85</td>
</tr>
<tr>
<td>Hessing------</td>
<td>0-4</td>
<td>Gravelly silt loam.</td>
<td>CL-ML A-4</td>
<td>0</td>
<td>75-85</td>
<td>60-75</td>
<td>55-65</td>
</tr>
<tr>
<td></td>
<td>4-11</td>
<td>Silt loam, silty clay loam.</td>
<td>CL A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>11-18</td>
<td>Very fine sandy loam.</td>
<td>CL-ML A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>18-30</td>
<td>Gravelly loam----</td>
<td>IGN A-4</td>
<td>0</td>
<td>60-70</td>
<td>55-65</td>
<td>45-55</td>
</tr>
<tr>
<td></td>
<td>30-60</td>
<td>Stratified very gravelly loamy coarse sand to extremely gravelly sand.</td>
<td>GP-GM, GW-GM A-1</td>
<td>0</td>
<td>35-45</td>
<td>20-35</td>
<td>10-20</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In</td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
</tr>
<tr>
<td>512*:</td>
<td></td>
<td></td>
<td></td>
<td>Pot</td>
<td>Pot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relley</td>
<td>0-8</td>
<td>Silt loam----</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>195-100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>8-16</td>
<td>Silt loam----</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>195-100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>16-28</td>
<td>Silt loam----</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>195-100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>12-40</td>
<td>Silt loam----</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>195-100</td>
<td>95-100</td>
</tr>
<tr>
<td>Jesse Camp</td>
<td>0-4</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>4-12</td>
<td>Silt loam, very</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>621*:</td>
<td></td>
<td></td>
<td></td>
<td>Pot</td>
<td>Pot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loncan</td>
<td>0-9</td>
<td>Gravely loam--</td>
<td>GC, CL</td>
<td>A-6</td>
<td>0-15</td>
<td>16-80</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>22-26</td>
<td>Unweathered</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-14</td>
<td>Unweathered</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>51</td>
<td></td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>632*:</td>
<td></td>
<td></td>
<td></td>
<td>Pot</td>
<td>Pot</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6-12</td>
<td>Loam, sandy loam,</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Stratified very</td>
<td>GP</td>
<td>A-1</td>
<td>0-15</td>
<td>25-35</td>
<td>10-35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly sandy loam to extremely gravelly coarse sand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>632*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orovada</td>
<td>0-8</td>
<td>Fine sandy loam</td>
<td>0</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam, loam.</td>
<td>0</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>0</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
</tr>
<tr>
<td>Misad</td>
<td>0-7</td>
<td>Gravelly very fine sandy loam.</td>
<td>5-10</td>
<td>SM, SM-SC, GM, GM-SC</td>
<td>A-2, A-4</td>
<td>0-5</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>7-31</td>
<td>Stratified very sandy loam to very gravelly sandy loam.</td>
<td>5-10</td>
<td>SM, SM-SC</td>
<td>A-1, A-2</td>
<td>5-10</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td>31-60</td>
<td>Stratified very gravelly loamy sand to extremely gravelly coarse sand.</td>
<td>5-10</td>
<td>GP-GM</td>
<td>A-1</td>
<td>5-10</td>
<td>40-55</td>
</tr>
<tr>
<td>633*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>McConnel</td>
<td>0-6</td>
<td>Gravelly loam.</td>
<td>0</td>
<td>GM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>60-70</td>
</tr>
<tr>
<td></td>
<td>6-12</td>
<td>Loam, sandy loam, fine sandy loam.</td>
<td>0</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly coarse sand.</td>
<td>0-15</td>
<td>GP</td>
<td>A-1</td>
<td>0-15</td>
<td>25-35</td>
</tr>
<tr>
<td>Rasille</td>
<td>0-6</td>
<td>Silt loam.</td>
<td>0</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>6-15</td>
<td>Silt loam, very fine sandy loam.</td>
<td>0</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>15-60</td>
<td>Silt loam, very fine sandy loam.</td>
<td>0</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Wholan</td>
<td>0-6</td>
<td>Silt loam.</td>
<td>0</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>6-60</td>
<td>Very fine sandy loam, silt loam.</td>
<td>0</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>635*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>McConnel</td>
<td>0-6</td>
<td>Gravelly loam.</td>
<td>0</td>
<td>GM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>60-70</td>
</tr>
<tr>
<td></td>
<td>6-12</td>
<td>Loam, sandy loam, fine sandy loam.</td>
<td>0</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly coarse sand.</td>
<td>0-15</td>
<td>GP</td>
<td>A-1</td>
<td>0-15</td>
<td>25-35</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASH70</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>635*: Rasille------------</td>
<td>0-6</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>6-15</td>
<td>Silt loam, very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>15-41</td>
<td>Silt loam, very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>41-60</td>
<td>Stratified fine sandy loam to very gravelly coarse sand.</td>
<td>SM, GM</td>
<td>A-1</td>
<td>0</td>
<td>55-80</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>6-12</td>
<td>Loam, sandy loam. fine sandy loam.</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly coarse sand.</td>
<td>GP</td>
<td>A-1</td>
<td>0-15</td>
<td>25-35</td>
<td>10-35</td>
</tr>
<tr>
<td></td>
<td>35-70</td>
<td>Stratified very gravelly sandy loam to extremely gravelly coarse sand.</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-10</td>
<td>25-40</td>
<td>20-35</td>
</tr>
<tr>
<td>Rasille----------------</td>
<td>0-6</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>6-15</td>
<td>Silt loam, very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>15-60</td>
<td>Silt loam, very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>637*: McConnel---------</td>
<td>0-6</td>
<td>Fine sandy loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>6-12</td>
<td>Loam, sandy loam. fine sandy loam.</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly coarse sand.</td>
<td>GP</td>
<td>A-1</td>
<td>0-15</td>
<td>25-35</td>
<td>10-35</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&gt; 3 inches 4 10 40 200</td>
<td>Pct</td>
<td>Pct</td>
</tr>
<tr>
<td>637*: Orovada-------------</td>
<td>0-8</td>
<td>Very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0 95-100 90-100 80-95 60-75</td>
<td>25-35</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam, loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0 75-100 75-95 60-80 40-60</td>
<td>20-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0 75-100 75-95 60-85 35-55</td>
<td>20-30</td>
<td>NP-5</td>
</tr>
<tr>
<td>McConnel, gravelly-------</td>
<td>0-6</td>
<td>Gravelly fine sandy loam.</td>
<td>GM</td>
<td>A-2, A-4</td>
<td>0 60-70 50-70 40-60 25-45</td>
<td>15-25</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>6-12</td>
<td>Loam, sandy loam, fine sandy loam.</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0 95-100 90-100 65-80 45-60</td>
<td>15-25</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly coarse sand.</td>
<td>GP</td>
<td>A-1</td>
<td>0-15 25-35 10-35 5-15 0-5</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td>638*: McConnel------------</td>
<td>0-6</td>
<td>Fine sandy loam</td>
<td>ML</td>
<td>A-4</td>
<td>0 95-100 85-95 70-80 50-60</td>
<td>15-25</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>6-12</td>
<td>Loam, sandy loam, fine sandy loam.</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0 95-100 90-100 65-80 45-60</td>
<td>15-25</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly coarse sand.</td>
<td>GP</td>
<td>A-1</td>
<td>0-15 25-35 10-35 5-15 0-5</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td>Wholan---------------------</td>
<td>0-6</td>
<td>Silt loam------</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100 95-100 80-90</td>
<td>20-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>6-60</td>
<td>Very fine sandy loam, silt loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0 100 100 95-100 75-90</td>
<td>20-30</td>
<td>NP-5</td>
</tr>
<tr>
<td>670*: Filiran-------------</td>
<td>0-7</td>
<td>Silt loam.</td>
<td>ML, CL-ML</td>
<td>A-4</td>
<td>0 90-100 90-100 80-95 50-70</td>
<td>15-25</td>
<td>NP-10</td>
</tr>
<tr>
<td></td>
<td>7-12</td>
<td>Gravelly silt loam.</td>
<td>GM-GC, GC</td>
<td>A-4, A-6</td>
<td>0-5 65-80 55-70 45-60 35-50</td>
<td>20-35</td>
<td>5-20</td>
</tr>
<tr>
<td></td>
<td>12-33</td>
<td>Clay, silty clay loam, gravelly clay.</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0 80-100 70-90 65-85 60-80</td>
<td>40-55</td>
<td>25-35</td>
</tr>
<tr>
<td></td>
<td>33-60</td>
<td>Cemented-------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pineval-------------------</td>
<td>0-5</td>
<td>Gravelly fine sandy loam.</td>
<td>SM-SC</td>
<td>A-2</td>
<td>0 65-85 60-75 50-70 20-35</td>
<td>20-30</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td>5-11</td>
<td>Very gravelly clay loam, very gravelly clay loam, very sandy clay loam.</td>
<td>GC</td>
<td>A-2</td>
<td>0 35-60 25-50 20-40 15-35</td>
<td>30-40</td>
<td>10-15</td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly sand.</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-25 30-60 20-50 15-40 5-20</td>
<td>---</td>
<td>NP</td>
</tr>
</tbody>
</table>

See footnote at end of table.
### TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>670</strong>*: Kingingham----</td>
<td>0-7</td>
<td>Gravely very fine sandy loam.</td>
<td>ISM, A-2, A-4</td>
<td>0-5</td>
<td>70-85</td>
<td>55-70</td>
<td>50-65</td>
</tr>
<tr>
<td>7-22</td>
<td>Gravely clay loam, gravelly clay, silty clay loam.</td>
<td>GC, CL, CH A-7</td>
<td>0-5</td>
<td>70-85</td>
<td>55-70</td>
<td>50-65</td>
<td>45-60</td>
</tr>
<tr>
<td>22-60</td>
<td>Indurated--------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>7-12</td>
<td>Gravely silt loam.</td>
<td>GM-GC, GC, A-4, A-6</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td>12-33</td>
<td>Clay, silty clay loam, gravelly clay</td>
<td>CL, CH A-7</td>
<td>0</td>
<td>80-100</td>
<td>70-90</td>
<td>65-85</td>
<td>60-80</td>
</tr>
<tr>
<td>33-60</td>
<td>Cemented---------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>5-16</td>
<td>Gravely clay, gravelly clay loam, clay.</td>
<td>CL, CH A-7</td>
<td>0-5</td>
<td>75-90</td>
<td>70-85</td>
<td>65-85</td>
<td>50-65</td>
</tr>
<tr>
<td>16-27</td>
<td>Indurated---------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>27-60</td>
<td>Cemented---------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>7-12</td>
<td>Gravely silt loam.</td>
<td>GM-GC, GC, A-4, A-6</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td>12-33</td>
<td>Clay, silty clay loam, gravelly clay</td>
<td>CL, CH A-7</td>
<td>0</td>
<td>80-100</td>
<td>70-90</td>
<td>65-85</td>
<td>60-80</td>
</tr>
<tr>
<td>33-60</td>
<td>Cemented---------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Buffaran--------</strong></td>
<td>0-5</td>
<td>Gravely loam---</td>
<td>GC, SC A-6</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
<td>45-60</td>
</tr>
<tr>
<td>5-16</td>
<td>Gravely clay, gravelly clay loam, clay.</td>
<td>CL, CH A-7</td>
<td>0-5</td>
<td>75-90</td>
<td>70-85</td>
<td>65-80</td>
<td>50-65</td>
</tr>
<tr>
<td>16-27</td>
<td>Indurated---------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>27-60</td>
<td>Cemented---------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Orovada--------</strong></td>
<td>0-8</td>
<td>Fine sandy loam</td>
<td>SM, A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>75-95</td>
</tr>
<tr>
<td>8-20</td>
<td>Fine sandy loam, loam.</td>
<td>SM, ML A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
<td>60-80</td>
<td>140-60</td>
</tr>
<tr>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>SM, ML A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
<td>60-80</td>
<td>35-55</td>
</tr>
<tr>
<td><strong>680</strong>*: Skulliwak------</td>
<td>0-10</td>
<td>Silty loam---</td>
<td>CL A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>90-100</td>
</tr>
<tr>
<td>10-60</td>
<td>Stratified silty clay loam to silty clay.</td>
<td>CH, CL A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td><strong>Umbreland------</strong></td>
<td>0-7</td>
<td>Silty loam---</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td>7-60</td>
<td>Silty clay, silty clay loam.</td>
<td>CL, CH A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>90-100</td>
<td>85-95</td>
</tr>
</tbody>
</table>

See footnote at end of table.
### TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Unified</th>
<th>AASHTO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In</td>
<td></td>
<td>Fragments</td>
<td>Percentage passing sieve number--</td>
<td>Liquid limit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

#### 680°:

- **Wendane**
  - 0-7 | Silt loam | ML | A-4 | 0 | 100 | 100 | 90-100 | 70-95 | 30-40 | NP-10 |
  - 7-18 | Silt loam, very fine sandy loam. | ML | A-4 | 0 | 100 | 100 | 95-100 | 70-80 | 30-40 | NP-10 |
  - 18-60 | Stratified silt loam to clay loam. | CL, ML | A-6, A-7 | 0 | 100 | 100 | 95-100 | 85-95 | 35-45 | 10-20 |

#### 683°:

- **Ocala**
  - 0-4 | Silt loam | ML, CL | A-4, A-6 | 0 | 100 | 100 | 95-100 | 85-95 | 30-40 | 5-15 |
  - 4-16 | Silt loam, silty clay loam. | ML, CL | A-6, A-7 | 0 | 100 | 100 | 95-100 | 85-95 | 30-50 | 10-20 |
  - 16-60 | Silt loam, silty clay loam. | ML, CL | A-6, A-7 | 0 | 90-100 | 90-100 | 90-95 | 85-95 | 30-50 | 10-20 |

- **Sonoma**
  - 0-12 | Silt loam | CL | A-6 | 0 | 100 | 100 | 95-100 | 75-90 | 30-35 | 10-15 |
  - 12-60 | Silty clay loam | CL | A-6, A-7 | 0 | 100 | 100 | 95-100 | 85-95 | 35-50 | 15-25 |

- **Paranat**
  - 0-11 | Silt loam | ML | A-4 | 0 | 100 | 100 | 95-100 | 85-100 | 25-35 | NP-15 |
  - 11-60 | Silt loam, silty clay loam. | ML | A-4, A-6 | 0 | 100 | 100 | 95-100 | 90-100 | 30-40 | 5-15 |

#### 700°:

- **Orovada**
  - 0-8 | Fine sandy loam | SM, ML | A-2, A-4 | 0 | 95-100 | 90-100 | 75-95 | 30-50 | --- | NP |
  - 8-26 | Fine sandy loam, loam. | SM, ML | A-4 | 0 | 75-100 | 75-95 | 60-80 | 40-60 | 20-30 | NP-5 |
  - 26-61 | Stratified fine sandy loam to silt loam. | SM, ML | A-4 | 0 | 75-100 | 75-95 | 60-85 | 35-55 | 20-30 | NP-5 |

- **Rasille**
  - 0-6 | Silt loam | ML | A-4 | 0 | 100 | 100 | 95-100 | 85-100 | 20-30 | NP-5 |
  - 6-15 | Silt loam, very fine sandy loam. | ML | A-4 | 0 | 100 | 100 | 95-100 | 75-100 | 20-30 | NP-5 |
  - 15-60 | Silt loam, very fine sandy loam. | ML | A-4 | 0 | 100 | 100 | 95-100 | 75-100 | 20-30 | NP-5 |

- **Wholan**
  - 0-6 | Silt loam | ML | A-4 | 0 | 100 | 100 | 95-100 | 80-90 | 20-30 | NP-5 |
  - 6-60 | Very fine sandy loam, loam. | ML | A-4 | 0 | 100 | 100 | 95-100 | 75-100 | 20-30 | NP-5 |

#### 701°:

- **Orovada**
  - 0-8 | Fine sandy loam | SM, ML | A-2, A-4 | 0 | 95-100 | 90-100 | 75-95 | 30-50 | --- | NP |
  - 8-20 | Fine sandy loam, loam. | SM, ML | A-4 | 0 | 75-100 | 75-95 | 60-80 | 40-60 | 20-30 | NP-5 |
  - 20-60 | Stratified fine sandy loam to silt loam. | SM, ML | A-4 | 0 | 75-100 | 75-95 | 60-85 | 35-55 | 20-30 | NP-5 |

#### 702°:

- **Orovada**
  - 0-8 | Fine sandy loam | SM, ML | A-2, A-4 | 0 | 95-100 | 90-100 | 75-95 | 30-50 | --- | NP |
  - 8-20 | Fine sandy loam, loam. | SM, ML | A-4 | 0 | 75-100 | 75-95 | 60-80 | 40-60 | 20-30 | NP-5 |
  - 20-60 | Stratified fine sandy loam to silt loam. | SM, ML | A-4 | 0 | 75-100 | 75-95 | 60-85 | 35-55 | 20-30 | NP-5 |

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>4 inches</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>702*; Creemon-------------</td>
<td>0-10</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>10-15</td>
<td>Very fine sandy loam, silt loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>15-45</td>
<td>Stratified very fine sandy loam to silt loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>45-60</td>
<td>Stratified gravelly very fine sandy loam to very fine sandy loam</td>
<td>SM</td>
<td>A-4</td>
<td>0</td>
<td>80-90</td>
<td>70-85</td>
</tr>
<tr>
<td>703-------- Orovada------</td>
<td>0-8</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam, loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td>704*; Orovada------------</td>
<td>0-6</td>
<td>Gravelly fine sandy loam</td>
<td>GM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>60-70</td>
<td>50-70</td>
</tr>
<tr>
<td></td>
<td>6-12</td>
<td>Loam, sandy loam, fine sandy loam</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly coarse sand</td>
<td>GP</td>
<td>A-1</td>
<td>0-15</td>
<td>25-35</td>
<td>10-35</td>
</tr>
<tr>
<td>705*; Orovada------------</td>
<td>0-8</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam, loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td>Valmy---------------------</td>
<td>0-3</td>
<td>Very fine sandy loam</td>
<td>SM</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
</tr>
<tr>
<td></td>
<td>3-43</td>
<td>Stratified very fine sandy loam to gravelly coarse sandy loam</td>
<td>SM</td>
<td>A-4, A-2, A-1</td>
<td>0-5</td>
<td>80-95</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>43-66</td>
<td>Gravelly sand, very gravelly sand</td>
<td>SP-SM, SM, GP-GM, GM</td>
<td>A-1</td>
<td>0-10</td>
<td>40-75</td>
<td>30-70</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing</th>
<th>Liquid</th>
<th>Plasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO sieve number</td>
<td></td>
<td>index</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 10 40 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poorcal------</td>
<td>0-9</td>
<td>Loam---------</td>
<td>CL-ML</td>
<td>A-4</td>
<td>0 95-100 90-100 85-95 60-70</td>
<td>20-25</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td>30-62</td>
<td>Very gravelly</td>
<td>GM</td>
<td>A-1, A-2</td>
<td>0 45-60 40-50 15-40 10-35</td>
<td>---</td>
<td>NP</td>
</tr>
<tr>
<td>Lopwash------</td>
<td>0-12</td>
<td>Loam---------</td>
<td>CL-ML,</td>
<td>A-4</td>
<td>0 90-100 80-90 75-85 45-55</td>
<td>20-25</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Very gravelly</td>
<td>SM-SC</td>
<td>A-2</td>
<td>0 40-50 30-40 20-30 10-20</td>
<td>20-25</td>
<td>5-10</td>
</tr>
<tr>
<td>811*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Walti--------</td>
<td>0-4</td>
<td>Cobbly loam--</td>
<td>CL-ML</td>
<td>A-4</td>
<td>25-40 70-85 65-80 55-70 50-60</td>
<td>20-30</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td>4-10</td>
<td>Clay loam,</td>
<td>CL</td>
<td>A-6</td>
<td>0-10 90-100 65-90 60-80 50-65</td>
<td>35-40</td>
<td>15-10</td>
</tr>
<tr>
<td></td>
<td>10-30</td>
<td>Clay, gravelly clay.</td>
<td>ICH, MH</td>
<td>A-7</td>
<td>0-10 90-100 65-90 60-80 50-75</td>
<td>55-65</td>
<td>25-35</td>
</tr>
<tr>
<td></td>
<td>30-34</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>4 in</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>In</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50-65</td>
<td>15-25</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40-60</td>
<td>15-25</td>
<td>70-85</td>
</tr>
</tbody>
</table>

**Shagnasty**

| 15-36 | Clay, clay loam | CL, CH | A-7 | 5-10 | 90-100 | 85-95 | 75-90 | 60-75 | 40-60 | 20-35 |
| 57-61 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

**Walti**

| 0-4 | Very clay loam | CL-ML, ML | A-4 | 30-40 | 75-90 | 65-80 | 55-70 | 50-60 | 20-30 | NP-10 |
| 4-10 | Clay loam | CL | A-6 | 0-10 | 90-100 | 65-90 | 60-80 | 50-65 | 35-40 | 15-20 |
| 10-30 | Clay, gravelly clay | CH, MH | A-7 | 0-10 | 90-100 | 165-90 | 160-80 | 50-75 | 55-65 | 25-35 |
| 30-34 | Unweathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

**850, 854**

| 0-8 | Silt loam | CL-ML, ML | A-4 | 0 | 95-100 | 95-100 | 95-100 | 75-90 | 25-35 | 5-10 |
| 8-16 | Silt loam | CL-ML, ML | A-4 | 0 | 95-100 | 95-100 | 95-100 | 85-95 | 25-35 | 5-10 |
| 16-28 | Silt loam | CL-ML, ML | A-4 | 0 | 95-100 | 95-100 | 95-100 | 85-95 | 25-35 | 5-10 |
| 28-60 | Silt loam | CL-ML, ML | A-4 | 0 | 95-100 | 95-100 | 95-100 | 85-95 | 25-35 | 5-10 |

**910**

| 0-8 | Loam | ML | A-4 | 0 | 90-100 | 85-95 | 75-85 | 50-60 | 20-25 | NP-5 |
| 21-60 | Extremely gravelly | GF-GM | A-1 | 0 | 40-50 | 20-35 | 10-25 | 5-10 | 15-20 | NP-5 |

**931**

| 15-36 | Clay, clay loam | CL, CH | A-7 | 5-10 | 90-100 | 85-95 | 75-90 | 60-75 | 40-60 | 20-35 |
| 57-61 | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

**Roca**

| 0-4 | Very clay loam | CL | A-6 | 50-60 | 85-100 | 75-85 | 70-80 | 50-60 | 25-35 | 10-15 |
| 4-24 | Very gravelly | GC, SC | A-2 | 0-10 | 60-75 | 30-50 | 25-45 | 20-35 | 45-60 | 20-30 |
| 24 | Unweathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

See footnote at the end of the table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>932*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15-36</td>
<td>Clay, clay loam</td>
<td>CL, CH</td>
<td>A-7</td>
<td>5-10</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>57-61</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Softscrabble</td>
<td>0-16</td>
<td>Very cobbly fine sandy loam.</td>
<td>GM-GC, SM-SC</td>
<td>A-4</td>
<td>40-50</td>
<td>65-80</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>16-30</td>
<td>Very cobbly clay loam.</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>30-45</td>
<td>60-75</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>30-60</td>
<td>Very gravelly clay loam.</td>
<td>GC</td>
<td>A-2, A-6, A-7</td>
<td>0-5</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td>942:*</td>
<td>0-5</td>
<td>Silt loam------</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Shipley</td>
<td>5-41</td>
<td>Silt loam, very fine sandy loam.</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>41-60</td>
<td>Very gravelly sand, extremely gravelly sand.</td>
<td>GP</td>
<td>A-1</td>
<td>5-10</td>
<td>40-50</td>
<td>25-40</td>
</tr>
<tr>
<td>950:</td>
<td>0-2</td>
<td>Sandy loam------</td>
<td>SM</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td>Silverado</td>
<td>2-19</td>
<td>Sandy loam------</td>
<td>SM</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>38-60</td>
<td>Very gravelly coarse sand.</td>
<td>GP</td>
<td>A-1</td>
<td>0</td>
<td>40-50</td>
<td>35-45</td>
</tr>
<tr>
<td>990*:</td>
<td>0-12</td>
<td>Silt loam------</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td>Sonoma</td>
<td>12-60</td>
<td>Stratified silt loam to silty clay loam.</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Wendane</td>
<td>0-7</td>
<td>Silt loam------</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>7-18</td>
<td>Silt loam, very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Stratified silt loam to clay loam.</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>998*:</td>
<td>0-12</td>
<td>Silt loam------</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Sonoma, frequently flooded</td>
<td>12-60</td>
<td>Stratified silt loam to silty clay loam.</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Paranat</td>
<td>0-20</td>
<td>Silt loam------</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>20-48</td>
<td>Stratified silt loam to silty clay loam.</td>
<td>ML</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>48-60</td>
<td>Stratified very fine sandy loam to silty clay.</td>
<td>ML</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>In</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>998*; Sonoma, occasionally flooded</td>
<td>0-12</td>
<td>Silt loam</td>
<td>CL, A-6</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Stratified silt, loam to silty clay loam</td>
<td>CL, ML, A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>999*; Sonoma</td>
<td>0-12</td>
<td>Silt loam</td>
<td>CL, A-6</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Stratified silt, loam to silty clay loam</td>
<td>CL, ML, A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Wendane</td>
<td>0-7</td>
<td>Silt loam, very fine sandy loam</td>
<td>ML, A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>7-18</td>
<td>Silt loam, very fine sandy loam</td>
<td>ML, A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Stratified silt, loam to clay</td>
<td>CL, ML, A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td>Paranat</td>
<td>0-20</td>
<td>Silt loam</td>
<td>ML, A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>20-48</td>
<td>Stratified silt, loam to silty clay loam</td>
<td>ML, A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>48-60</td>
<td>Stratified very fine sandy loam to silty clay</td>
<td>ML, A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>85-95</td>
</tr>
<tr>
<td>1011*; Stampede</td>
<td>0-10</td>
<td>Gravelly loam</td>
<td>CL, A-6</td>
<td>0</td>
<td>70-80</td>
<td>65-75</td>
<td>60-70</td>
</tr>
<tr>
<td></td>
<td>10-31</td>
<td>Clay, silty clay</td>
<td>CH, A-7</td>
<td>0-10</td>
<td>90-100</td>
<td>85-95</td>
<td>80-90</td>
</tr>
<tr>
<td></td>
<td>31-60</td>
<td>Indurated</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>4-30</td>
<td>Gravelly clay, clay loam</td>
<td>CH, CL, A-7</td>
<td>0-10</td>
<td>70-100</td>
<td>60-100</td>
<td>60-70</td>
</tr>
<tr>
<td>Caniwe</td>
<td>0-17</td>
<td>Very fine sandy loam</td>
<td>ML, A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>17-60</td>
<td>Stratified silt, loam to silty clay loam</td>
<td>ML, A-4, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenabo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0-4</td>
<td>gravelly</td>
<td>SM, GM</td>
<td>A-2, A-4</td>
<td>0-5 60-70 50-60 45-55 25-40</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>very fine</td>
<td>sandy loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-15</td>
<td>silty clay</td>
<td>CL</td>
<td>A-6</td>
<td>0 95-100 70-90 60-90 50-80</td>
<td>30-40</td>
<td>10-20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly</td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15-28</td>
<td>indurated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28-60</td>
<td>stratified</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>5-25 40-60 35-55 25-35 5-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>extremely</td>
<td>loam to</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly</td>
<td>coarse sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orovada</td>
<td>0-8</td>
<td>fine sandy</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0 95-100 90-100 75-95 30-50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-26</td>
<td>loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0 75-100 75-95 60-80 40-60</td>
<td>20-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly</td>
<td>sand loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>extremely</td>
<td>coarse sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26-61</td>
<td>stratified</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0 75-100 75-95 60-85 35-55</td>
<td>20-30</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>fine sandy</td>
<td>loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam to</td>
<td>silt loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffaran</td>
<td>0-5</td>
<td>gravelly</td>
<td>GC, SC</td>
<td>A-6</td>
<td>0-5 65-80 55-70 45-60 35-50</td>
<td>25-35</td>
<td>10-15</td>
</tr>
<tr>
<td></td>
<td>5-16</td>
<td>clay loam.</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5 75-90 70-85 65-80 50-65</td>
<td>40-55</td>
<td>20-30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly</td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16-27</td>
<td>indurated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>cemented</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1042*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenabo</td>
<td>0-4</td>
<td>gravelly</td>
<td>SM, GM</td>
<td>A-2, A-4</td>
<td>0-5 60-70 50-60 45-55 25-40</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>very fine</td>
<td>sandy loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-15</td>
<td>silty clay</td>
<td>CL</td>
<td>A-6</td>
<td>0 95-100 70-90 60-90 50-80</td>
<td>30-40</td>
<td>10-20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly</td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15-28</td>
<td>indurated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28-60</td>
<td>stratified</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>5-25 40-60 35-55 25-35 5-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>very sandy</td>
<td>loam to</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>extremely</td>
<td>gravelly coarse sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ricert</td>
<td>0-6</td>
<td>very gravelly</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10 50-60 40-50 35-50 25-35</td>
<td>20-30</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>very fine</td>
<td>sandy loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-18</td>
<td>loam, clay</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0 90-100 85-100 80-90 70-80</td>
<td>35-45</td>
<td>15-20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>very gravelly</td>
<td>GM, GP-GM</td>
<td>A-1</td>
<td>0-15 30-60 20-50 15-35 5-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly</td>
<td>loamy sand</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loamy sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fracture</th>
<th>Percentage passing sieve number—</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&gt; 3 inches 4</td>
<td>10</td>
<td>40</td>
<td>200</td>
</tr>
<tr>
<td>1042*: Desatoya--------</td>
<td>0-6</td>
<td>Gravelly fine</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>0-10</td>
<td>65-80</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>6-13</td>
<td>Gravelly clay</td>
<td>GC</td>
<td>A-7</td>
<td>0-5</td>
<td>65-75</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1097*: Tulase-----------</td>
<td>0-6</td>
<td>Silt loam----</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>6-60</td>
<td>Very fine sandy</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0-6</td>
<td>Very fine sandy</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>85-95</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>6-60</td>
<td>Stratified sandy</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0-6</td>
<td>Loam----------</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>6-12</td>
<td>Loam, sandy loam, ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>65-80</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>Stratified very</td>
<td>GP</td>
<td>A-1</td>
<td>0-15</td>
<td>25-35</td>
<td>13-35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6-30</td>
<td>Gravelly clay, gravelly clay</td>
<td>GC, CL</td>
<td>A-7</td>
<td>0-10</td>
<td>65-85</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>30-34</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1140*: Wendane----------</td>
<td>0-7</td>
<td>Silt loam-----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>7-18</td>
<td>Silt loam, very</td>
<td>ML----------</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Stratified silt</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

See footnote at the end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fracture size (% sieve number)</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
</tr>
<tr>
<td>1141*: Wendane, frequently flooded</td>
<td>0-7</td>
<td>Silt loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>7-18</td>
<td>Silt loam, very fine sandy loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Stratified silt clay to clay loam</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>1142*: Wendane</td>
<td>0-7</td>
<td>Silt loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>7-60</td>
<td>Silty clay, silty clay loam, clay loam, clay</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>1143*: Wendane</td>
<td>0-7</td>
<td>Silt loam</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>4-23</td>
<td>Silt loam</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>23-60</td>
<td>Silty clay, clay loam</td>
<td>CH</td>
<td>A-7</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>1145*: Wendane</td>
<td>0-7</td>
<td>Silt loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Stratified silt clay to clay loam</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Playas</td>
<td>1146*: Wendane</td>
<td>0-7</td>
<td>Silt loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>7-18</td>
<td>Silt loam, very fine sandy loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Stratified silt clay to clay loam</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Sonoma</td>
<td>0-10</td>
<td>Silt loam</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>10-60</td>
<td>Stratified silt clay to silty clay loam</td>
<td>CL, ML</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valmy*</td>
<td>0-6</td>
<td>Very fine sandy loam</td>
<td>ISM A-4</td>
<td>0</td>
<td>90-100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>6-42</td>
<td>Stratified very fine sandy loam to gravelly coarse sandy loam</td>
<td>ISM A-4, A-2, A-1</td>
<td>0-5</td>
<td>80-95</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>42-60</td>
<td>Gravelly sand, very gravelly sand</td>
<td>SP-SM, SM, A-1</td>
<td>0-10</td>
<td>40-75</td>
<td>30-70</td>
</tr>
<tr>
<td>Wendane*</td>
<td>0-7</td>
<td>Silt loam------</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>7-18</td>
<td>Silt loam, very fine sandy loam</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Stratified silt loam to clay loam</td>
<td>CL, ML A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Bubus*</td>
<td>0-6</td>
<td>Very fine sandy loam</td>
<td>ML A-4</td>
<td>0</td>
<td>85-95</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>6-60</td>
<td>Stratified sandy loam to silt loam</td>
<td>ML A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td>Whirlo*</td>
<td>0-12</td>
<td>Gravelly very fine sandy loam</td>
<td>ML, GM A-4</td>
<td>0</td>
<td>60-75</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>24-60</td>
<td>Stratified very gravelly loam to extremely gravelly coarse sandy loam</td>
<td>GW-GM, GP-GM A-1</td>
<td>0-5</td>
<td>40-50</td>
<td>20-35</td>
</tr>
<tr>
<td>Broyles*</td>
<td>0-11</td>
<td>Very fine sandy loam</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>Stratified loam to gravelly loamy sand</td>
<td>ISM A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
</tr>
<tr>
<td>Wholan*</td>
<td>0-6</td>
<td>Silt loam------</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>6-60</td>
<td>Very fine sandy loam, silt loam</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Wholan*</td>
<td>0-5</td>
<td>Very fine sandy loam</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>5-60</td>
<td>Very fine sandy loam, silt loam</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Rasille*</td>
<td>0-6</td>
<td>Silt loam------</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>6-15</td>
<td>Silt loam, very fine sandy loam</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>15-60</td>
<td>Silt loam, very fine sandy loam</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragment</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td></td>
<td>sieve number</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wholan--------</td>
<td>0-5</td>
<td>Silt loam------</td>
<td>ML</td>
<td>IA-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5-60 Very fine sandy loam, silt loam.</td>
<td>ML</td>
<td>IA-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Raselle-------</td>
<td>0-6</td>
<td>Silt loam------</td>
<td>ML</td>
<td>IA-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6-15 Silt loam, very fine sandy loam.</td>
<td>ML</td>
<td>IA-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15-41 Silt loam, very fine sandy loam.</td>
<td>ML</td>
<td>IA-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>41-60 Stratified fine sandy loam to very gravelly coarse sand.</td>
<td>SM, GM</td>
<td>IA-1</td>
<td>0</td>
<td>55-80</td>
</tr>
<tr>
<td>Ricert--------</td>
<td>0-6</td>
<td>Gravelly silt loam.</td>
<td>SM-SC</td>
<td>IA-4</td>
<td>0</td>
<td>75-85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6-18 Loam, clay loam</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18-60 Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.</td>
<td>GM, GP-GM</td>
<td>A-1</td>
<td>0-15</td>
<td>30-60</td>
</tr>
<tr>
<td>Whirlor-------</td>
<td>0-12</td>
<td>Fine sandy loam</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>80-95</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24-60 Stratified very gravelly loam to extremely gravelly coarse sandy loam.</td>
<td>GW-GM, GP-GM</td>
<td>A-1</td>
<td>0-5</td>
<td>40-50</td>
</tr>
<tr>
<td>Pineval-------</td>
<td>0-5</td>
<td>Gravelly fine sandy loam.</td>
<td>SM-SC</td>
<td>A-2</td>
<td>0</td>
<td>65-85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5-11 Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.</td>
<td>GC</td>
<td>A-2</td>
<td>0</td>
<td>35-60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11-60 Stratified very gravelly sandy loam to extremely gravelly sand.</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-25</td>
<td>30-60</td>
</tr>
<tr>
<td>1282*--------</td>
<td>0-6</td>
<td>Very fine sandy loam.</td>
<td>ML, CL-ML</td>
<td>A-4</td>
<td>0-5</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6-18 Clay loam, loam</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Classification</th>
<th>Percentages passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1282*: Broyles**********</td>
<td>0-13</td>
<td>Very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td>13-60 Stratified loam to gravelly loamy sand.</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
<td>30-40</td>
<td>25-35</td>
</tr>
<tr>
<td>1284*: Ricert***********</td>
<td>0-6</td>
<td>Very gravelly very fine sandy loam.</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10</td>
<td>50-60</td>
<td>40-50</td>
</tr>
<tr>
<td>6-18 Loam, clay loam.</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
<td>80-90</td>
<td>70-80</td>
</tr>
<tr>
<td>18-60 Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.</td>
<td>GM, GP-GM</td>
<td>A-1</td>
<td>0-15</td>
<td>30-60</td>
<td>20-50</td>
<td>15-35</td>
<td>5-25</td>
</tr>
<tr>
<td>6-13 Gravelly loam, gravelly very fine sandy loam.</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>0-10</td>
<td>70-90</td>
<td>55-75</td>
<td>50-70</td>
<td>35-55</td>
</tr>
<tr>
<td>27-60 Extremely cobbly coarse sand, extremely cobbly loamy coarse sand.</td>
<td>GP, GP-GM</td>
<td>A-1</td>
<td>50-75</td>
<td>20-50</td>
<td>15-45</td>
<td>5-25</td>
<td>0-10</td>
</tr>
<tr>
<td>Pineval**********</td>
<td>0-5</td>
<td>Gravelly fine sandy loam.</td>
<td>SM-SC</td>
<td>A-2</td>
<td>0</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td>5-11 Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.</td>
<td>GC</td>
<td>A-2</td>
<td>0</td>
<td>35-60</td>
<td>25-50</td>
<td>20-40</td>
<td>15-35</td>
</tr>
<tr>
<td>11-60 Stratified very gravelly sandy loam to extremely gravelly sand.</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-25</td>
<td>30-60</td>
<td>20-50</td>
<td>15-40</td>
<td>5-20</td>
</tr>
<tr>
<td>1285*: Ricert***********</td>
<td>0-6</td>
<td>Gravelly silty loam.</td>
<td>SM-SC</td>
<td>A-4</td>
<td>0</td>
<td>75-85</td>
<td>55-75</td>
</tr>
<tr>
<td>6-18 Loam, clay loam.</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
<td>80-90</td>
<td>70-80</td>
</tr>
<tr>
<td>18-60 Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.</td>
<td>GM, GP-GM</td>
<td>A-1</td>
<td>0-15</td>
<td>30-60</td>
<td>20-50</td>
<td>15-35</td>
<td>5-25</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bubas---------------------</td>
<td>0-6</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>85-95</td>
<td>75-90</td>
<td>70-80</td>
</tr>
<tr>
<td>6-60</td>
<td>Stratified sandy loam to silt loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>80-90</td>
</tr>
<tr>
<td>Broyles-------------------</td>
<td>0-13</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>13-60</td>
<td>Stratified loam to gravelly loamy sand.</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
<td>30-40</td>
</tr>
<tr>
<td>Ricert--------------------</td>
<td>0-6</td>
<td>SM, SM-SC</td>
<td>A-2, A-4</td>
<td>0</td>
<td>65-80</td>
<td>50-75</td>
<td>40-60</td>
</tr>
<tr>
<td>6-18</td>
<td>Loam, clay loam</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
<td>80-90</td>
</tr>
<tr>
<td>Tenabo--------------------</td>
<td>0-4</td>
<td>SM, GM</td>
<td>A-2, A-4</td>
<td>0-5</td>
<td>60-70</td>
<td>50-60</td>
<td>45-55</td>
</tr>
<tr>
<td>4-15</td>
<td>Silty clay loam, clay loam, gravelly clay loam.</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>95-100</td>
<td>70-90</td>
<td>60-90</td>
</tr>
<tr>
<td>Broyles-------------------</td>
<td>0-13</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>13-60</td>
<td>Stratified loam to gravelly loamy sand.</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
<td>30-40</td>
</tr>
<tr>
<td>Ricert--------------------</td>
<td>0-7</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10</td>
<td>50-60</td>
<td>40-50</td>
<td>35-50</td>
</tr>
<tr>
<td>7-20</td>
<td>Loam, clay loam</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
<td>80-90</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1287*: Orovada----------</td>
<td>0-8</td>
<td>gravelly very fine sandy loam</td>
<td>GM, SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>60-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>fine sandy loam, sandy loam, very fine sandy loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td>13-60 Broyles-----------</td>
<td>0-13</td>
<td>gravelly very fine sandy loam</td>
<td>SM, GM</td>
<td>A-4</td>
<td>0</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>13-60</td>
<td>Stratified loam to gravelly loamy sand</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
</tr>
<tr>
<td>1288*: Ricert-----------</td>
<td>0-6</td>
<td>gravelly fine sandy loam</td>
<td>SM, SM-SC</td>
<td>A-2, A-4</td>
<td>0</td>
<td>65-80</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>6-18</td>
<td>Loam, clay loam</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Very gravelly gravelly loamy sand, extremely gravelly loamy sand</td>
<td>GM, GP-GM</td>
<td>A-1</td>
<td>0-15</td>
<td>30-60</td>
<td>10-50</td>
</tr>
<tr>
<td></td>
<td>Orovada</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam, loam, gravelly clay loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td>Tenabo-------------------</td>
<td>0-4</td>
<td>Very fine sandy loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>4-15</td>
<td>Clay loam, silty clay loam, gravelly clay loam</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>95-100</td>
<td>70-95</td>
</tr>
<tr>
<td></td>
<td>15-28</td>
<td>Indurated gravelly sandy loam to extremely gravelly coarse sand</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>28-60</td>
<td>Stratified very gravelly sandy loam</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>5-25</td>
<td>40-60</td>
<td>35-55</td>
</tr>
<tr>
<td>1289*: Ricert-----------</td>
<td>0-6</td>
<td>gravelly fine sandy loam</td>
<td>SM, SM-SC</td>
<td>A-2, A-4</td>
<td>0</td>
<td>65-80</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>6-18</td>
<td>Loam, clay loam</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand</td>
<td>GM, GP-GM</td>
<td>A-1</td>
<td>0-15</td>
<td>30-60</td>
<td>10-50</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Percent passing sieve number--</th>
<th>Liquid limit index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
</tr>
<tr>
<td><strong>1289</strong>: Blackhawk -----</td>
<td>0-3</td>
<td><em><strong>Very fine sandy loam.</strong></em></td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>3-14</td>
<td>Silt loam, loam, very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>14-30</td>
<td>Cemented-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>30-48</td>
<td>Stratified loam to gravelly coarse sand.</td>
<td>SM</td>
<td>A-1, A-2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>48-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly coarse sand.</td>
<td>GP-GM, SP, A-1</td>
<td>GP, SP-SM</td>
<td>0</td>
</tr>
<tr>
<td>Orovada------------------</td>
<td>0-8</td>
<td>Fine sandy loam.</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
</tr>
<tr>
<td><strong>1371</strong>: Chad----------</td>
<td>0-17</td>
<td>Cobbly loam-----</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>0-5</td>
</tr>
<tr>
<td></td>
<td>42-50</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>10-14</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Softscramble-------------</td>
<td>0-14</td>
<td>Fine sandy loam</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>5-15</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>14-18</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>14-18</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Stingdorn-----------------</td>
<td>0-7</td>
<td>Cobbly loam-----</td>
<td>SM-SC A-4</td>
<td>25-40</td>
<td>85-95</td>
<td>75-90</td>
<td>55-80</td>
</tr>
<tr>
<td></td>
<td>7-15</td>
<td>Very cobbly clay</td>
<td>GC A-6</td>
<td>15-50</td>
<td>160-75</td>
<td>55-65</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>15-20</td>
<td>Indurated------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1600*: Dumps and pits----</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1670*: Wieland-------------</td>
<td>0-8</td>
<td>Loam-------------</td>
<td>CL-M, ML A-4</td>
<td>0</td>
<td>90-100</td>
<td>75-100</td>
<td>70-90</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Gravelly clay----</td>
<td>CH, SC A-7</td>
<td>0-5</td>
<td>75-95</td>
<td>55-75</td>
<td>50-70</td>
</tr>
<tr>
<td>Allor----------------------</td>
<td>0-12</td>
<td>Very cobbly loam</td>
<td>SM-SC, GM-GC A-2, A-4</td>
<td>30-50</td>
<td>60-75</td>
<td>45-70</td>
<td>40-65</td>
</tr>
<tr>
<td></td>
<td>12-34</td>
<td>Gravelly clay</td>
<td>SM A-6, A-7</td>
<td>0-10</td>
<td>70-85</td>
<td>55-75</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td>34-60</td>
<td>Gravelly loamy sand, very gravelly loamy sand.</td>
<td>SM A-1</td>
<td>0-10</td>
<td>55-75</td>
<td>45-65</td>
<td>30-50</td>
</tr>
<tr>
<td>1680----------------------</td>
<td>0-6</td>
<td>Gravelly loam-----</td>
<td>SM-SC, CL-ML A-4</td>
<td>0-10</td>
<td>70-90</td>
<td>55-75</td>
<td>50-70</td>
</tr>
<tr>
<td></td>
<td>6-13</td>
<td>Gravelly loam, gravelly very fine sandy loam.</td>
<td>SM-SC, CL-ML A-4</td>
<td>0-10</td>
<td>70-90</td>
<td>55-75</td>
<td>50-70</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Extremely cobbly coarse sand, extremely cobbly loamy coarse sand.</td>
<td>GP, GP-GM A-1</td>
<td>50-75</td>
<td>15-45</td>
<td>5-25</td>
<td>0-10</td>
</tr>
</tbody>
</table>

See footnote at the end of the table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number—</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>6-13</td>
<td>Gravelly loam, gravelly very fine sandy loam.</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>0-10</td>
<td>70-90</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Extremely cobbly coarse sand, extremely cobbly loamy coarse sand.</td>
<td>GP, GP-GM</td>
<td>A-1</td>
<td>50-75</td>
<td>20-50</td>
<td>15-45</td>
</tr>
<tr>
<td>Chiara------------------</td>
<td>0-4</td>
<td>Gravelly loam</td>
<td>SM</td>
<td>A-4</td>
<td>0-5</td>
<td>70-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>4-13</td>
<td>Very fine sandy loam, silt loam, loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>13-60</td>
<td>Indurated</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wieland--------------</td>
<td>0-5</td>
<td>Gravelly loam</td>
<td>GC, CL, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>60-85</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>5-26</td>
<td>Gravelly clay, clay.</td>
<td>CH, SC</td>
<td>A-7</td>
<td>0-5</td>
<td>75-95</td>
<td>55-90</td>
</tr>
<tr>
<td></td>
<td>6-13</td>
<td>Gravelly loam, gravelly very fine sandy loam.</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>0-10</td>
<td>70-90</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Extremely cobbly coarse sand, extremely cobbly loamy coarse sand.</td>
<td>GP, GP-GM</td>
<td>A-1</td>
<td>50-75</td>
<td>20-50</td>
<td>15-45</td>
</tr>
<tr>
<td>Orovada----------</td>
<td>0-8</td>
<td>Gravelly fine sandy loam.</td>
<td>GM, SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>60-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam, loam, very fine sandy loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Frag-</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2003</strong>*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unius</td>
<td>0-4</td>
<td>Gravelly silt loam.</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>85-100</td>
<td>65-75</td>
</tr>
<tr>
<td></td>
<td>4-12</td>
<td>Silt loam, loam, gravelly loam.</td>
<td>CL, GC</td>
<td>A-6</td>
<td>0</td>
<td>65-100</td>
<td>60-100</td>
</tr>
<tr>
<td></td>
<td>12-44</td>
<td>Cemented------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>44-60</td>
<td>Gravelly loamy sand.</td>
<td>SM</td>
<td>A-1</td>
<td>0</td>
<td>60-80</td>
<td>55-75</td>
</tr>
<tr>
<td>Orovada</td>
<td>0-8</td>
<td>Fine sandy loam.</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>8-26</td>
<td>Fine sandy loam, loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>26-61</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td><strong>2010</strong>*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glyphs</td>
<td>0-7</td>
<td>Fine sandy loam.</td>
<td>CL-ML, SM-SC</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>7-17</td>
<td>Gravelly sandy clay loam, gravelly clay loam.</td>
<td>CL, SC</td>
<td>A-6, A-7</td>
<td>0</td>
<td>80-90</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>37-60</td>
<td>Very gravelly coarse sand.</td>
<td>GP, GP-GM, SP, SP-SM</td>
<td>A-1</td>
<td>0-5</td>
<td>40-65</td>
<td>35-45</td>
</tr>
<tr>
<td>Silverado</td>
<td>0-2</td>
<td>Gravelly sandy loam.</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>65-80</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>2-19</td>
<td>Sandy loam------</td>
<td>SM</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>38-60</td>
<td>Very gravelly coarse sand.</td>
<td>GP</td>
<td>A-1</td>
<td>0</td>
<td>40-50</td>
<td>35-45</td>
</tr>
<tr>
<td><strong>2011</strong>*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glyphs</td>
<td>0-7</td>
<td>Fine sandy loam.</td>
<td>CL-ML, SM-SC</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>7-17</td>
<td>Gravelly sandy clay loam, gravelly clay loam.</td>
<td>CL, SC</td>
<td>A-6, A-7</td>
<td>0</td>
<td>80-90</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>37-60</td>
<td>Very gravelly coarse sand.</td>
<td>GP, GP-GM, SP, SP-SM</td>
<td>A-1</td>
<td>0-5</td>
<td>40-65</td>
<td>35-45</td>
</tr>
<tr>
<td>Muni</td>
<td>0-3</td>
<td>Fine sandy loam.</td>
<td>SM-SC</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>3-18</td>
<td>Sandy clay loam, clay loam, loam.</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>18-49</td>
<td>Cemented--------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>49-60</td>
<td>Very gravelly loamy sand.</td>
<td>SM, SM</td>
<td>A-1</td>
<td>0-10</td>
<td>50-65</td>
<td>35-55</td>
</tr>
</tbody>
</table>

See footnote at end of table.
### TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches 4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td><strong>2012</strong>:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glyphs--</td>
<td>0-7</td>
<td>Fine sandy loam</td>
<td>CL-ML, SM-SC</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>7-17</td>
<td>Gravelly sandy clay loam, gravelly clay loam.</td>
<td>CL, SC</td>
<td>A-6, A-7</td>
<td>0</td>
<td>80-90</td>
<td>60-75</td>
<td>55-65</td>
</tr>
<tr>
<td>37-60</td>
<td>Very gravelly coarse sand.</td>
<td>GP, GP-GM, SP, SP-SM</td>
<td>A-1</td>
<td>0-5</td>
<td>40-65</td>
<td>35-45</td>
<td>15-25</td>
</tr>
<tr>
<td><strong>2015</strong>:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glyphs, gently sloping--</td>
<td>0-7</td>
<td>Fine sandy loam</td>
<td>CL-ML, SM-SC</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>7-17</td>
<td>Gravelly sandy clay loam, gravelly clay loam.</td>
<td>CL, SC</td>
<td>A-6, A-7</td>
<td>0</td>
<td>80-90</td>
<td>60-75</td>
<td>55-65</td>
</tr>
<tr>
<td>37-60</td>
<td>Very gravelly coarse sand.</td>
<td>GP, GP-GM, SP, SP-SM</td>
<td>A-1</td>
<td>0-5</td>
<td>40-65</td>
<td>35-45</td>
<td>15-25</td>
</tr>
<tr>
<td>Glyphs, moderately steep--</td>
<td>0-7</td>
<td>Fine sandy loam</td>
<td>CL-ML, SM-SC</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td>7-17</td>
<td>Gravelly sandy clay loam, gravelly clay loam.</td>
<td>CL, SC</td>
<td>A-6, A-7</td>
<td>0</td>
<td>80-90</td>
<td>60-75</td>
<td>55-65</td>
</tr>
<tr>
<td>37-60</td>
<td>Very gravelly coarse sand.</td>
<td>GP, GP-GM, SP, SP-SM</td>
<td>A-1</td>
<td>0-5</td>
<td>40-65</td>
<td>35-45</td>
<td>15-25</td>
</tr>
<tr>
<td>4-18</td>
<td>Sandy loam, fine sandy loam.</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-100</td>
<td>60-90</td>
</tr>
<tr>
<td>18-60</td>
<td>Sandy loam, fine sandy loam.</td>
<td>SM, ML</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-100</td>
<td>60-90</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotinom------------------</td>
<td>0-9</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>9-60</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4, A-5</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td>Wholan-------------------</td>
<td>0-6</td>
<td>Very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>6-60</td>
<td>Very fine sandy loam, silt loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Wholan, alkaline---------</td>
<td>0-6</td>
<td>Very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>6-60</td>
<td>Very fine sandy loam, silt loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2022*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotinom------------------</td>
<td>0-9</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>9-60</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4, A-5</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td>Orovada------------------</td>
<td>0-8</td>
<td>Very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam, silt loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>10-60</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td>2031*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muni---------------------</td>
<td>0-3</td>
<td>Fine sandy loam</td>
<td>SM-SC</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>3-18</td>
<td>Sandy clay loam, clay loam, loam.</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>18-49</td>
<td>Cemented------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>49-60</td>
<td>Very gravelly loamy sand.</td>
<td>GM, SM</td>
<td>A-1</td>
<td>0-10</td>
<td>50-65</td>
<td>35-55</td>
</tr>
<tr>
<td>Orovada------------------</td>
<td>0-5</td>
<td>Fine sandy loam</td>
<td>SM-SC, SM</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>5-15</td>
<td>Fine sandy loam, silt loam.</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
</tr>
<tr>
<td></td>
<td>15-40</td>
<td>Fine sandy loam</td>
<td>SM-SC, SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>90-100</td>
<td>80-95</td>
</tr>
<tr>
<td></td>
<td>40-60</td>
<td>Stratified gravelly loam to very gravelly sand.</td>
<td>SP-SM, SM</td>
<td>A-1</td>
<td>0-5</td>
<td>75-90</td>
<td>45-60</td>
</tr>
<tr>
<td>Unius-------------------</td>
<td>0-4</td>
<td>Gravelly silt loam.</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>85-100</td>
<td>65-75</td>
</tr>
<tr>
<td></td>
<td>4-12</td>
<td>Silt loam, gravelly loam.</td>
<td>CL, GC</td>
<td>A-6</td>
<td>0</td>
<td>65-100</td>
<td>60-100</td>
</tr>
<tr>
<td></td>
<td>12-44</td>
<td>Cemented--------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>44-60</td>
<td>Gravelly loamy sand.</td>
<td>SM</td>
<td>A-1</td>
<td>0</td>
<td>60-80</td>
<td>55-75</td>
</tr>
<tr>
<td>2060*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxcorel-----------------</td>
<td>0-5</td>
<td>Gravelly very fine sandy loam.</td>
<td>SM, GM</td>
<td>A-4</td>
<td>0-10</td>
<td>60-85</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>5-34</td>
<td>Clay, clay loam</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>85-95</td>
<td>80-90</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2060*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beoska</td>
<td>0-9</td>
<td>Silt loam----</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>85-90</td>
<td>75-85</td>
</tr>
<tr>
<td></td>
<td>9-18</td>
<td>Silt loam, silty clay loam, clay loam.</td>
<td>CL, A-6, A-7</td>
<td>A-4</td>
<td>0</td>
<td>80-100</td>
<td>75-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whirlo</td>
<td>0-12</td>
<td>Gravelly loamy sand - clay loam.</td>
<td>ML, GM A-4</td>
<td>A-4</td>
<td>0</td>
<td>60-75</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>24-60</td>
<td>Stratified very gravelly loamy sand - extremely gravelly coarse sandy loam.</td>
<td>GM-GM A-1</td>
<td>GM-GM A-1</td>
<td>0-5</td>
<td>40-50</td>
<td>20-35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2061*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-34</td>
<td>Clay, clay loam.</td>
<td>CL, CH A-7</td>
<td>GM-GC A-7</td>
<td>0-5</td>
<td>85-90</td>
<td>80-90</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-25</td>
<td>Loam, clay loam, gravelly clay loam.</td>
<td>SC, CL A-6</td>
<td>GM-GC A-6</td>
<td>0</td>
<td>75-90</td>
<td>60-85</td>
</tr>
<tr>
<td></td>
<td>25-60</td>
<td>Cemented------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>4-13</td>
<td>Gravelly clay gravelly loam.</td>
<td>GC A-6</td>
<td>GC A-6</td>
<td>0-10</td>
<td>65-75</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Indurated------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2063*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxcordel</td>
<td>0-8</td>
<td>Gravelly very fine sandy loam.</td>
<td>SM, GM A-4</td>
<td>A-4</td>
<td>0-10</td>
<td>60-85</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>8-34</td>
<td>Clay, clay loam.</td>
<td>CL, CH A-7</td>
<td>A-7</td>
<td>0-5</td>
<td>85-95</td>
<td>80-90</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Segments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2063*: Pineval, steep--------</td>
<td>0-5</td>
<td>Gravelly loam</td>
<td>CL-ML, GM-GC</td>
<td>A-4</td>
<td>0</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>5-11</td>
<td>Very gravelly clay loam, very gravelly loam,</td>
<td>GC</td>
<td>A-2</td>
<td>0</td>
<td>35-60</td>
<td>25-50</td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly sand.</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-25</td>
<td>30-60</td>
<td>20-50</td>
</tr>
<tr>
<td>Pineval, strongly sloping------</td>
<td>0-5</td>
<td>Gravelly loam</td>
<td>CL-ML, GM-GC</td>
<td>A-4</td>
<td>0</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>5-11</td>
<td>Very gravelly clay loam, very gravelly loam,</td>
<td>GC</td>
<td>A-2</td>
<td>0</td>
<td>35-60</td>
<td>25-50</td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly sand.</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-25</td>
<td>30-60</td>
<td>20-50</td>
</tr>
<tr>
<td>2069*: Oxcord--------</td>
<td>0-6</td>
<td>Gravelly very fine sandy loam.</td>
<td>SM, GM</td>
<td>A-4</td>
<td>0-10</td>
<td>60-85</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>6-37</td>
<td>Clay, clay loam</td>
<td>ICL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>85-95</td>
<td>80-90</td>
</tr>
<tr>
<td>Wieland--------</td>
<td>0-8</td>
<td>Gravelly loam</td>
<td>GC, CL, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>60-85</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Gravelly clay</td>
<td>CH, SC</td>
<td>A-7</td>
<td>0-5</td>
<td>75-95</td>
<td>55-90</td>
</tr>
<tr>
<td></td>
<td>5-26</td>
<td>Loam, clay loam, sandy clay loam.</td>
<td>ICL, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>26-33</td>
<td>Cemented----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>33-60</td>
<td>Fine sandy loam, sandy loam, loamy sand.</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments (inches)</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fenster</td>
<td>0-5</td>
<td>ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>5-10</td>
<td>ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>10-60</td>
<td>ML, CL</td>
<td>A-4, A-6,</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td>Jesse Camp</td>
<td>0-4</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>4-12</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>12-60</td>
<td>ML</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>3-7</td>
<td>GM</td>
<td>A-1, A-2</td>
<td>0-5</td>
<td>70-100</td>
<td>65-95</td>
<td>60-85</td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>GM</td>
<td>A-1, A-7</td>
<td>0-5</td>
<td>55-65</td>
<td>50-60</td>
<td>45-55</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6-16</td>
<td>GM</td>
<td>A-1, A-2</td>
<td>0-10</td>
<td>65-80</td>
<td>50-75</td>
<td>35-60</td>
</tr>
<tr>
<td></td>
<td>16-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-7</td>
<td>GM</td>
<td>A-1, A-2</td>
<td>0-5</td>
<td>70-100</td>
<td>65-95</td>
<td>60-85</td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>GM</td>
<td>A-1, A-7</td>
<td>0-5</td>
<td>55-65</td>
<td>50-60</td>
<td>45-55</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Unified</th>
<th>AASHTO</th>
<th>Fragments &gt; 3 inches</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2089*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locane</td>
<td>0-6</td>
<td>Very gravelly loam</td>
<td>GM-GC</td>
<td>A-2</td>
<td>5-15</td>
<td>50-65</td>
<td>30-45</td>
<td>25-40</td>
<td>15-30</td>
</tr>
<tr>
<td></td>
<td>6-14</td>
<td>Very gravelly clay loam</td>
<td>GC</td>
<td>A-2, A-7</td>
<td>0-10</td>
<td>50-65</td>
<td>35-50</td>
<td>30-45</td>
<td>25-40</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2090--------</td>
<td>0-3</td>
<td>Gravelly loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>5-10</td>
<td>65-85</td>
<td>60-75</td>
<td>45-60</td>
<td>30-45</td>
</tr>
<tr>
<td>Punchbowl</td>
<td>3-7</td>
<td>Loam, gravelly loam</td>
<td>SC, GC, CL</td>
<td>A-6</td>
<td>0-5</td>
<td>70-100</td>
<td>65-95</td>
<td>60-85</td>
<td>45-55</td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>Gravelly clay loam, gravelly sandy clay loam</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>0-5</td>
<td>55-65</td>
<td>50-60</td>
<td>45-55</td>
<td>35-45</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Punchbowl</td>
<td>3-7</td>
<td>Loam, gravelly loam</td>
<td>SC, CL, GC</td>
<td>A-6</td>
<td>0-5</td>
<td>70-100</td>
<td>65-95</td>
<td>60-85</td>
<td>45-55</td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>Gravelly clay loam, gravelly sandy clay loam</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>0-5</td>
<td>55-65</td>
<td>50-60</td>
<td>45-55</td>
<td>35-45</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>4-16</td>
<td>Gravelly clay loam, gravelly loam</td>
<td>SC</td>
<td>A-2, A-6</td>
<td>0-10</td>
<td>65-80</td>
<td>50-75</td>
<td>35-60</td>
<td>30-50</td>
</tr>
<tr>
<td></td>
<td>16-20</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sumine</td>
<td>0-10</td>
<td>Very gravelly loam</td>
<td>GM-GC</td>
<td>A-2, A-4</td>
<td>10-15</td>
<td>50-65</td>
<td>45-60</td>
<td>40-50</td>
<td>30-40</td>
</tr>
<tr>
<td></td>
<td>30-34</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2092*:</td>
<td>0-3</td>
<td>Gravelly loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>5-10</td>
<td>65-85</td>
<td>60-75</td>
<td>45-60</td>
<td>30-45</td>
</tr>
<tr>
<td>Punchbowl</td>
<td>3-7</td>
<td>Loam, gravelly loam</td>
<td>SC, GC, CL</td>
<td>A-6</td>
<td>0-5</td>
<td>70-100</td>
<td>65-95</td>
<td>60-85</td>
<td>45-55</td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>Gravelly clay loam, gravelly sandy clay loam</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>0-5</td>
<td>55-65</td>
<td>50-60</td>
<td>45-55</td>
<td>35-45</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>14-60</td>
<td>Very gravelly clay loam, very gravelly loam</td>
<td>GC</td>
<td>A-2, A-6</td>
<td>5-10</td>
<td>50-65</td>
<td>35-50</td>
<td>35-45</td>
<td>30-40</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments sieve number</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&gt; 3 inches 4 10 40 200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In</td>
<td></td>
<td></td>
<td>Pct</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2092*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reluctan-----------------</td>
<td>0-8</td>
<td>Very gravelly loam.</td>
<td>GM-GC A-2, A-4</td>
<td>10-25 35-65 40-60 100-150</td>
<td>0-5 85-100 100-150 150-200</td>
<td>5-10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-33</td>
<td>Gravelly clay</td>
<td>GC, CL A-6, A-7</td>
<td>0-15 65-85 85-100 100-150</td>
<td>0-5 55-65 65-85 85-100</td>
<td>15-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>33-37</td>
<td>Gravelly clay</td>
<td>A-6, A-7</td>
<td>0-5 45-65 65-85 85-100</td>
<td>0-5 45-65 65-85 85-100</td>
<td>35-45</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unweathered</td>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-7</td>
<td>Loam, gravelly</td>
<td>CL, SC, GC A-6</td>
<td>0-5 90-130 130-150 150-200</td>
<td>0-5 90-130 130-150 150-200</td>
<td>25-35</td>
<td>10-15</td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>Gravelly clay</td>
<td>GC A-6, A-7</td>
<td>0-5 45-65 65-85 85-100</td>
<td>0-5 45-65 65-85 85-100</td>
<td>35-45</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unweathered</td>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rock outcrop.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2094*:</td>
<td>0-3</td>
<td>Gravelly loam</td>
<td>SM A-2, A-4</td>
<td>0-5 10-30 30-45 45-60 60-85 85-100</td>
<td>0-5 10-30 30-45 45-60 60-85 85-100</td>
<td>35-45</td>
<td>15-25</td>
</tr>
<tr>
<td></td>
<td>3-7</td>
<td>Loam, gravelly</td>
<td>SC, GC CL A-6</td>
<td>0-5 65-85 85-100 100-150</td>
<td>0-5 65-85 85-100 100-150</td>
<td>25-35</td>
<td>10-15</td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>Gravelly clay</td>
<td>GC A-6, A-7</td>
<td>0-5 45-65 65-85 85-100</td>
<td>0-5 45-65 65-85 85-100</td>
<td>15-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unweathered</td>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18-22</td>
<td>Indurated------</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akerue-------------------</td>
<td>0-3</td>
<td>Very cobbly loam</td>
<td>SM-SC A-4</td>
<td>10-40 75-85 85-100 100-150</td>
<td>10-40 75-85 85-100 100-150</td>
<td>15-25</td>
<td>10-15</td>
</tr>
<tr>
<td></td>
<td>3-15</td>
<td>Very cobbly clay</td>
<td>GC, SC, CL A-7</td>
<td>10-40 85-100 100-150 150-200</td>
<td>10-40 85-100 100-150 150-200</td>
<td>15-25</td>
<td>10-15</td>
</tr>
<tr>
<td></td>
<td>15-21</td>
<td>Indurated------</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>21-25</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2095*:</td>
<td>0-3</td>
<td>Loam----------</td>
<td>SM, ML A-4</td>
<td>10-40 80-90 90-100 100-150</td>
<td>10-40 80-90 90-100 100-150</td>
<td>15-25</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td>3-7</td>
<td>Loam, gravelly</td>
<td>SC, GC CL A-6</td>
<td>0-5 65-85 85-100 100-150</td>
<td>0-5 65-85 85-100 100-150</td>
<td>25-35</td>
<td>10-15</td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>Gravelly clay</td>
<td>GC A-6, A-7</td>
<td>0-5 45-65 65-85 85-100</td>
<td>0-5 45-65 65-85 85-100</td>
<td>35-45</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unweathered</td>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>inches 4 10 40 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CL-ML, CL</td>
<td></td>
<td>A-4, A-6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7-19</td>
<td>Very cobbled clay, GC</td>
<td>GC</td>
<td>A-7</td>
<td>50-80 60-70 50-65 45-55 35-50</td>
<td>45-55 20-30</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>extremely cobbled clay.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rock outcrop.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-7</td>
<td>Loam, gravelly</td>
<td>Loam, gravelly</td>
<td>A-6</td>
<td>0-5 70-100 65-95 60-85 45-55</td>
<td>25-35 20-25</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>Gravelly clay</td>
<td>Gravelly clay</td>
<td>A-6, A-7</td>
<td>0-5 55-65 50-60 45-55 35-45</td>
<td>35-45 15-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locane--------</td>
<td>0-5</td>
<td>CL-ML, SM-SC</td>
<td>CL-ML, SM-SC</td>
<td>A-4</td>
<td>25-40 80-100 80-95 60-80 45-60</td>
<td>20-30 5-10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam, very gravelly sand</td>
<td>clay loam, very</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loam.</td>
<td>gravelly loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, very gravelly sandy loam.</td>
<td>loam, very gravelly sandy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2097*: Punchbowl</td>
<td>0-3</td>
<td>SM</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>5-10 65-85 60-75 45-60 30-45</td>
<td>15-25 10-15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-7</td>
<td>Loam, gravelly</td>
<td>Loam, gravelly</td>
<td>A-6</td>
<td>0-5 70-100 65-95 60-85 45-55</td>
<td>25-35 10-15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>Gravelly clay</td>
<td>Gravelly clay</td>
<td>A-6, A-7</td>
<td>0-5 55-65 50-60 45-55 35-45</td>
<td>35-45 15-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam, very gravelly sand</td>
<td>clay loam, very gravelly sand</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay, very gravelly clay</td>
<td>clay, very gravelly clay</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at the end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments (inches)</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2099*:</td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Punchbowl---------------</td>
<td>0-3</td>
<td>Very gravelly</td>
<td>GM A-1, A-2</td>
<td>5-10</td>
<td>45-50</td>
<td>0-5-45</td>
<td>15-25 NP-5</td>
</tr>
<tr>
<td></td>
<td>3-7</td>
<td>Loam, gravelly</td>
<td>SC, CL, GC A-6</td>
<td>0-5</td>
<td>60-65</td>
<td>35-45</td>
<td>10-15</td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>Gravelly clay</td>
<td>GC A-6, A-7</td>
<td>0-5</td>
<td>50-55</td>
<td>15-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Roca---------------------</td>
<td>0-5</td>
<td>Very cobbly</td>
<td>CL A-6</td>
<td>0-5</td>
<td>15-30</td>
<td>25-35</td>
<td>10-15</td>
</tr>
<tr>
<td></td>
<td>5-27</td>
<td>Very gravelly</td>
<td>GC, SC A-2</td>
<td>0-10</td>
<td>25-45</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td></td>
<td>27-31</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Rock outcrop.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2100*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grassvalley-------------</td>
<td>0-4</td>
<td>Gravelly loam</td>
<td>SM-SC A-2, A-4</td>
<td>0-5</td>
<td>55-70</td>
<td>30-45</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td>4-13</td>
<td>Gravelly clay</td>
<td>GC A-6</td>
<td>0-10</td>
<td>55-70</td>
<td>30-45</td>
<td>15-20</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Indurated-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Grina-------------------</td>
<td>0-3</td>
<td>Very gravelly</td>
<td>GM-GC GC A-2</td>
<td>0-5</td>
<td>30-45</td>
<td>25-35</td>
<td>5-15</td>
</tr>
<tr>
<td></td>
<td>3-14</td>
<td>Loam, silt loam</td>
<td>CL A-6, A-7</td>
<td>0-5</td>
<td>30-45</td>
<td>25-35</td>
<td>5-15</td>
</tr>
<tr>
<td></td>
<td>14-18</td>
<td>Gravelly clay</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>silty clay loam.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Unsel Variant----------</td>
<td>0-2</td>
<td>Very gravelly</td>
<td>GM-GC A-2</td>
<td>0-5</td>
<td>15-30</td>
<td>20-30</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td>2-15</td>
<td>Gravelly clay</td>
<td>SC A-6, A-7</td>
<td>0-5</td>
<td>55-70</td>
<td>30-45</td>
<td>15-20</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Grassvalley-------------</td>
<td>0-4</td>
<td>Fine sandy loam</td>
<td>SM-SC A-2, A-4</td>
<td>0-5</td>
<td>30-45</td>
<td>20-25</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td>4-13</td>
<td>Gravelly clay</td>
<td>GC A-6</td>
<td>0-10</td>
<td>55-70</td>
<td>30-40</td>
<td>15-20</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Indurated-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Oxtorel, eroded</td>
<td>0-3</td>
<td>Very gravelly</td>
<td>GC A-2, A-6</td>
<td>0-5</td>
<td>45-55</td>
<td>30-40</td>
<td>15-20</td>
</tr>
<tr>
<td></td>
<td>3-30</td>
<td>Clay, clay loam</td>
<td>CL, CH A-7</td>
<td>0-5</td>
<td>85-95</td>
<td>60-80</td>
<td>20-30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam, very</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loam.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Oxtorel----------------</td>
<td>0-8</td>
<td>Gravelly fine</td>
<td>SM-SC, GC A-2, A-4</td>
<td>0-10</td>
<td>60-80</td>
<td>55-75</td>
<td>25-30</td>
</tr>
<tr>
<td></td>
<td>8-34</td>
<td>Clay, clay loam</td>
<td>CL, CH A-7</td>
<td>0-5</td>
<td>85-95</td>
<td>60-80</td>
<td>20-30</td>
</tr>
<tr>
<td></td>
<td>34-60</td>
<td>Very gravelly</td>
<td>GM A-1</td>
<td>0-15</td>
<td>30-60</td>
<td>15-25</td>
<td>NP-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam, very</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loam.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number---</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO Pct &gt;3 inches 4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>2102*: Grassval----------</td>
<td>0-4</td>
<td>SM-SC</td>
<td>Gravelly loam</td>
<td>A-2, A-4</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>4-13</td>
<td>GC</td>
<td>Gravelly clay</td>
<td>A-6</td>
<td>0-10</td>
<td>65-75</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Indurated----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wieland-------------------</td>
<td>0-8</td>
<td>GC, CL, SC</td>
<td>Gravelly loam</td>
<td>A-6</td>
<td>0-5</td>
<td>60-85</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>CH, SC</td>
<td>Gravelly clay</td>
<td>A-7</td>
<td>0-5</td>
<td>75-95</td>
<td>55-90</td>
</tr>
<tr>
<td>2104*: Grassval----------</td>
<td>0-4</td>
<td>SM-SC</td>
<td>Gravelly loam</td>
<td>A-2, A-4</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>4-13</td>
<td>GC</td>
<td>Gravelly clay</td>
<td>A-6</td>
<td>0-10</td>
<td>65-75</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Indurated----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>3-7</td>
<td>SC, GC, CL</td>
<td>Loam, gravelly loam</td>
<td>A-6</td>
<td>0-5</td>
<td>70-100</td>
<td>65-95</td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>GC</td>
<td>Gravelly clay</td>
<td>A-6, A-7</td>
<td>0-5</td>
<td>55-65</td>
<td>50-60</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2105*: Grassval----------</td>
<td>0-4</td>
<td>SM-SC</td>
<td>Gravelly loam</td>
<td>A-2, A-4</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>4-13</td>
<td>GC</td>
<td>Gravelly clay</td>
<td>A-6</td>
<td>0-10</td>
<td>65-75</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Indurated----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Glyphs-------------------</td>
<td>0-7</td>
<td>CL-ML, SM-SC</td>
<td>Fine sandy clay loam</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>7-17</td>
<td>CL, SC</td>
<td>Gravelly sandy clay loam</td>
<td>A-6, A-7</td>
<td>0</td>
<td>80-90</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>17-37</td>
<td>SM-SC, GM-GC</td>
<td>Gravelly sandy clay loam</td>
<td>A-2</td>
<td>0</td>
<td>60-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>37-60</td>
<td>GP, SP-GM, SP, SP-SM</td>
<td>Very gravelly coarse sand</td>
<td>A-1</td>
<td>0</td>
<td>40-65</td>
<td>35-45</td>
</tr>
<tr>
<td>Muni---------------------</td>
<td>0-3</td>
<td>SM-SC</td>
<td>Fine sandy loam</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>3-18</td>
<td>CL</td>
<td>Sandy clay loam</td>
<td>A-6</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>18-49</td>
<td>---</td>
<td>Cemented-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>49-60</td>
<td>GM, SM</td>
<td>Very gravelly loamy sand</td>
<td>A-1</td>
<td>0-10</td>
<td>50-65</td>
<td>35-55</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>[Depth]</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO &gt; 3 inches</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>2110*:</td>
<td>0-6</td>
<td>Fine sand----</td>
<td>SP, SP-SM</td>
<td>A-3</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Isolde--------------------</td>
<td>6-60</td>
<td>Fine sand, sand</td>
<td>SP, SP-SM</td>
<td>A-3</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Davey--------------------</td>
<td>0-5</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>5-14</td>
<td>Fine sandy loam, sandy loam.</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>14-67</td>
<td>Fine sand, loamy fine sand.</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>85-100</td>
</tr>
<tr>
<td>2540*:</td>
<td>0-4</td>
<td>Cobbley loam---</td>
<td>SC, CL</td>
<td>A-6</td>
<td>15-30</td>
<td>75-90</td>
</tr>
<tr>
<td>Buffaran-----------------</td>
<td>4-15</td>
<td>Gravelly clay</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>15-60</td>
<td>Indurated------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wieland-----------------</td>
<td>0-8</td>
<td>Gravelly loam---</td>
<td>GC, CL, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>60-85</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Gravelly clay, clay.</td>
<td>CH, SC</td>
<td>A-7</td>
<td>0-5</td>
<td>75-90</td>
</tr>
<tr>
<td>2541*:</td>
<td>0-4</td>
<td>Gravelly loam----</td>
<td>SC, CL</td>
<td>A-6</td>
<td>5-15</td>
<td>75-90</td>
</tr>
<tr>
<td>Buffaran-----------------</td>
<td>4-15</td>
<td>Gravelly clay</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>15-60</td>
<td>Indurated------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Zoesta-----------------</td>
<td>0-7</td>
<td>Cobbley loam---</td>
<td>CL-M, ML</td>
<td>A-4</td>
<td>25-40</td>
<td>80-90</td>
</tr>
<tr>
<td></td>
<td>7-23</td>
<td>Clay------------</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-10</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>23-31</td>
<td>Gravelly clay</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>31-60</td>
<td>Very gravelly clay loam, very gravelly loam.</td>
<td>GC</td>
<td>A-2</td>
<td>0</td>
<td>45-55</td>
</tr>
<tr>
<td>2542*:</td>
<td>0-5</td>
<td>Gravelly loam----</td>
<td>GC, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>65-80</td>
</tr>
<tr>
<td>Buffaran, gravelly------</td>
<td>5-16</td>
<td>Gravelly clay, gravelly clay, loam, clay.</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>16-27</td>
<td>Indurated------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Cemented-------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>5-16</td>
<td>Gravelly clay, gravelly clay, loam, clay.</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>16-27</td>
<td>Indurated------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Cemented-------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragment size</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4-13</td>
<td>Very fine sandy loam, silt loam</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>13-60</td>
<td>Indurated------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2543* Buffaran------------</td>
<td>0-5</td>
<td>Gravelly loam</td>
<td>GC, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>5-16</td>
<td>Gravelly clay, gravelly clay loam, clay</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>75-90</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td>16-27</td>
<td>Indurated------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Cemented-------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2543* Spasprey------------</td>
<td>0-5</td>
<td>Gravelly fine sandy loam</td>
<td>SM, SM-SC</td>
<td>A-1, A-2</td>
<td>0-5</td>
<td>70-90</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>5-26</td>
<td>Loam, clay loam, sandy clay loam</td>
<td>CL, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>12-33</td>
<td>Cemented-------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>33-60</td>
<td>Fine sandy loam, sandy loam, loamy sand</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Allon---------------------</td>
<td>0-12</td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>5-10</td>
<td>70-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>12-34</td>
<td>Gravelly clay, gravelly clay loam, clay</td>
<td>SC</td>
<td>A-6, A-7</td>
<td>0-10</td>
<td>70-85</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>34-60</td>
<td>Gravelly loamy sand, very gravelly loamy sand</td>
<td>SM</td>
<td>A-1</td>
<td>0-10</td>
<td>55-75</td>
<td>45-65</td>
</tr>
<tr>
<td>2545* Buffaran------------</td>
<td>0-5</td>
<td>Gravelly loam</td>
<td>GC, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>5-16</td>
<td>Gravelly clay, gravelly clay loam, clay</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>75-90</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td>16-27</td>
<td>Indurated------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Cemented-------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pineval-------------------</td>
<td>0-5</td>
<td>Gravelly loam</td>
<td>CL-ML, GM-GC</td>
<td>A-4</td>
<td>0</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>5-11</td>
<td>Very gravelly clay loam, very gravelly clay loam, very gravelly clay loam</td>
<td>GC</td>
<td>A-2</td>
<td>0</td>
<td>35-60</td>
<td>25-50</td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly sand</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-25</td>
<td>30-60</td>
<td>20-50</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches 4 10 40 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2546*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-16</td>
<td>Gravelly clay, gravelly clay loam, clay.</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>75-90</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td>16-27</td>
<td>Indurated-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Cemented-------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>5-26</td>
<td>Loam, clay loam, loamy clay</td>
<td>CL, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>26-33</td>
<td>Cemented-------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>33-60</td>
<td>Fine sandy loam, sandy loam, loamy sand.</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Locane----------------</td>
<td>0-6</td>
<td>Gravelly loam-----</td>
<td>SM-SC</td>
<td>A-4, A-2</td>
<td>0-5</td>
<td>70-85</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>6-14</td>
<td>Very gravelly clay loam.</td>
<td>GC</td>
<td>A-2, A-7</td>
<td>0-10</td>
<td>50-65</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2547*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffaranc-------------</td>
<td>0-2</td>
<td>Gravelly loam-----</td>
<td>SC, CL</td>
<td>A-6</td>
<td>5-15</td>
<td>75-90</td>
<td>70-80</td>
</tr>
<tr>
<td></td>
<td>2-16</td>
<td>Gravelly clay loam, gravelly clay, clay.</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>75-90</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td>16-27</td>
<td>Indurated-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Cemented-------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Desatoya-------------</td>
<td>0-6</td>
<td>Very gravelly loam.</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10</td>
<td>50-60</td>
<td>45-50</td>
</tr>
<tr>
<td></td>
<td>6-13</td>
<td>Gravelly clay loam, gravelly clay, clay.</td>
<td>GC</td>
<td>A-7</td>
<td>0-5</td>
<td>65-75</td>
<td>55-70</td>
</tr>
<tr>
<td>2548*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-16</td>
<td>Gravelly clay, gravelly clay loam, clay.</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>75-90</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td>16-27</td>
<td>Indurated-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Cemented-------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2548*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenabo------------------</td>
<td>0-4</td>
<td>SM, GM</td>
<td>A-2, A-4</td>
<td>0-5</td>
<td>60-70 50-60 45-55 25-40</td>
<td></td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td>4-15</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>95-100 70-90 60-90 50-80</td>
<td></td>
<td>10-20</td>
</tr>
<tr>
<td></td>
<td>15-28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28-60</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>5-25</td>
<td>40-60 35-55 25-35 5-20</td>
<td></td>
<td>NP</td>
</tr>
<tr>
<td>Pineval----------------</td>
<td>0-5</td>
<td>SM-SC</td>
<td>A-2</td>
<td>0</td>
<td>65-85 60-75 50-70 20-35</td>
<td>20-30</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td>5-11</td>
<td>GC</td>
<td>A-2</td>
<td>0</td>
<td>35-60 25-50 20-40 15-35</td>
<td>30-40</td>
<td>10-15</td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-25</td>
<td>30-60 20-50 15-40 5-20</td>
<td></td>
<td>NP</td>
</tr>
<tr>
<td>2554*</td>
<td>0-6</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-5</td>
<td>45-60 35-50 25-40 15-30</td>
<td>20-30</td>
<td>5-10</td>
</tr>
<tr>
<td>Laped-------------------</td>
<td>6-18</td>
<td>GC, SC</td>
<td>A-6, A-7</td>
<td>0-10</td>
<td>60-80 55-75 45-60 35-50</td>
<td>35-45</td>
<td>15-20</td>
</tr>
<tr>
<td></td>
<td>18-23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>Unweathered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hooplite----------------</td>
<td>0-4</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10</td>
<td>45-60 35-50 30-45 10-20</td>
<td>20-30</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td>4-8</td>
<td>GC</td>
<td>A-2, A-6</td>
<td>0-15</td>
<td>45-60 35-50 30-45 25-40</td>
<td>30-40</td>
<td>10-15</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Unweathered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12-35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>Unweathered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at the end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&lt; 3</td>
<td>4</td>
<td>10</td>
<td>40</td>
</tr>
</tbody>
</table>

2555*:

|                 | 0-6   | Very cobbly loam | GM-GC | A-4 | 30-50 | 65-80 | 50-70 | 45-60 | 35-50 | 20-30 | 5-10 |
| Laped--------- | 6-18  | Gravelly clay | GC, SC | A-6, A-7 | 0-5 | 60-80 | 55-70 | 45-60 | 35-50 | 35-45 | 15-20 |
|                | 18-23 | Indurated------ | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|                | 23    | Unweathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Colbar---------

|                 | 0-3   | Very cobbly loam | CL-ML | A-4 | 50-60 | 90-100 | 85-95 | 75-85 | 50-60 | 20-30 | 5-10 |
|                | 3-22  | Gravelly clay, cobbly clay loam | CL | A-6 | 10-35 | 90-95 | 70-85 | 60-80 | 50-65 | 30-60 | 10-20 |
|                | 22-26 | Gravelly loam, cobbly clay loam | SM-SC | A-4 | 5-30 | 75-95 | 60-90 | 55-75 | 35-55 | 20-30 | 5-10 |
|                | 26-30 | Unweathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

2570*:

|                 | 0-6   | Gravelly loam | SM-SC, SM | A-4 | 0-5 | 65-85 | 60-75 | 50-65 | 35-50 | 20-30 | NP-10 |
|                | 6-16  | Gravelly clay, cobbly clay loam | CL | A-6 | 10-35 | 75-90 | 70-85 | 60-80 | 50-65 | 30-40 | 10-20 |
|                | 16-21 | Gravelly loam, cobbly clay loam | SM-SC | A-4 | 5-30 | 75-95 | 60-90 | 55-75 | 35-55 | 20-30 | 5-10 |
|                | 21    | Unweathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Atlow---------

|                 | 0-3   | Very cobbly loam | SM-SC | A-4 | 35-50 | 70-80 | 60-75 | 50-65 | 35-50 | 20-30 | 5-10 |
|                | 14    | Unweathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Burrita-------

|                 | 0-7   | Very cobbly loam, very stony clay loam | GM-GC | A-4 | 25-40 | 60-70 | 55-65 | 50-60 | 35-45 | 15-25 | 5-10 |
|                | 14    | Unweathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

2603*:

|                | 5-14  | Loam, silt loam, silty clay loam | CL | A-6, A-7 | 0 | 90-100 | 80-100 | 75-95 | 60-85 | 30-45 | 10-20 |
|                | 14    | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Genaw--------

|                 | 0-6   | Gravelly loam | GM-GC | A-4 | 0-5 | 65-80 | 55-75 | 45-65 | 35-50 | 20-30 | 5-10 |
|                | 6-11  | Gravelly loam, gravelly clay loam | GM-GC | A-6 | 0-5 | 60-80 | 55-75 | 45-65 | 35-50 | 25-35 | 10-15 |
|                | 11-16 | Very gravelly loam | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|                | 16    | Weathered bedrock | --- | --- | --- | --- | --- | --- | --- | --- | --- |

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
</tr>
<tr>
<td>2640*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rasille</td>
<td>0-6</td>
<td>Silt loam----</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>6-15</td>
<td>Silt loam, very</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>15-41</td>
<td>fine sandy loam.</td>
<td>ML A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>41-60</td>
<td>Stratified fine</td>
<td>sand loamy</td>
<td>SM, GM A-1</td>
<td>0</td>
<td>55-80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>coarse sand.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelk</td>
<td>0-14</td>
<td>Silt loam-----</td>
<td>CL-ML, CL A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>14-51</td>
<td>Silt loam-----</td>
<td>CL-ML, CL A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>51-60</td>
<td>Silt loam-----</td>
<td>CL-ML, CL A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td>2672*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-27</td>
<td>Clay loam-----</td>
<td>CH A-7</td>
<td>0</td>
<td>185-95</td>
<td>185-95</td>
</tr>
<tr>
<td></td>
<td>27-36</td>
<td>Gravelly loam, clay</td>
<td>CH A-7</td>
<td>0</td>
<td>185-95</td>
<td>185-95</td>
</tr>
<tr>
<td></td>
<td>36-60</td>
<td>Gravello loam,</td>
<td>SM-SC A-2, A-4</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>coarse sand.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>sandy loam.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>VERY gravelly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unweathered</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trunk</td>
<td>0-3</td>
<td>Cobbley loam-</td>
<td>CL-ML, CL A-4</td>
<td>15-30</td>
<td>75-95</td>
<td>70-90</td>
</tr>
<tr>
<td></td>
<td>3-30</td>
<td>Gravelly clay,</td>
<td>CL, CH, GC A-7</td>
<td>0-10</td>
<td>55-85</td>
<td>50-80</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>Unweathered</td>
<td>SM-SC A-2</td>
<td>15-30</td>
<td>75-95</td>
<td>70-90</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>gravelly clay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unweathered</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2681*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tessfive</td>
<td>0-6</td>
<td>Gravelly loam-</td>
<td>SM-SC, A-4</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Unweathered</td>
<td>SM-SC A-2</td>
<td>0-5</td>
<td>70-80</td>
<td>60-70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>gravelly sand.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>sandy loam.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>gravelly clay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>very gravelly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unweathered</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puett</td>
<td>0-4</td>
<td>Gravelly sand-</td>
<td>SM-SC A-2</td>
<td>0-5</td>
<td>70-80</td>
<td>60-70</td>
</tr>
<tr>
<td></td>
<td>4-15</td>
<td>Coarse sandy</td>
<td>SM, ML, GM A-1, A-2,</td>
<td>0</td>
<td>55-95</td>
<td>50-90</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>gravelly clay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>gravelly sand.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unweathered</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-14</td>
<td>Gravelly loam,</td>
<td>CL A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>80-100</td>
</tr>
<tr>
<td></td>
<td>14-18</td>
<td>Weathered bedrock</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragment size</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>6-11</td>
<td>Gravelly loam, gravelly clay loam.</td>
<td>GC, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>60-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Orovada-----------------</td>
<td>0-8</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam, loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perlor------------------</td>
<td>0-7</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>85-100</td>
<td>80-100</td>
</tr>
<tr>
<td></td>
<td>7-14</td>
<td>Loam, sandy loam, gravelly sandy loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>70-95</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Orovada----------------</td>
<td>0-8</td>
<td>Gravelly very fine sandy loam.</td>
<td>GM, SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>60-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam, loam, very fine sandy loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>3-12</td>
<td>Gravelly clay loam.</td>
<td>SC</td>
<td>A-6</td>
<td>0</td>
<td>70-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragment</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9-27</td>
<td>Gravelly clay</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>0-15</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Handy---------</td>
<td>0-4</td>
<td>Gravelly loam</td>
<td>SC</td>
<td>A-2, A-6</td>
<td>0-10</td>
<td>65-75</td>
<td>55-65</td>
</tr>
<tr>
<td></td>
<td>4-30</td>
<td>Gravelly clay</td>
<td>IC, CL</td>
<td>A-7</td>
<td>0-10</td>
<td>70-100</td>
<td>60-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loam to very gravelly loamy sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-24</td>
<td>Gravelly clay</td>
<td>GC</td>
<td>A-2, A-7</td>
<td>10-30</td>
<td>30-60</td>
<td>20-55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>extremely gravelly clay loam, extremely gravelly clay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly sandy loam, extremely gravelly sandy clay loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly clay, very gravelly clay loam, very gravelly sandy clay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly sandy clay loam, extremely gravelly clay loam, very gravelly clay loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffaran------</td>
<td>0-5</td>
<td>Gravelly loam</td>
<td>GC, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>5-16</td>
<td>Gravelly clay</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>75-90</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly clay loam, clay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16-27</td>
<td>Indurated-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Cemented------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>Pct</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2731*:</td>
<td>0-2</td>
<td>Very cobbly loam</td>
<td>GC A-2, A-6</td>
<td>25-50</td>
<td>50-75</td>
<td>45-70</td>
<td>40-60</td>
</tr>
<tr>
<td></td>
<td>124-60</td>
<td>Extremely gravelly sandy loam, extremely gravelly sandy clay loam.</td>
<td>GP-GC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-6</td>
<td>Very gravelly clay, very gravelly clay loam, very gravelly sandy clay.</td>
<td>GC A-2</td>
<td>5-15</td>
<td>50-65</td>
<td>35-50</td>
<td>20-45</td>
</tr>
<tr>
<td></td>
<td>16-60</td>
<td>Extremely gravelly sandy clay loam, extremely gravelly clay loam, very gravelly loam.</td>
<td>GP-GC, GC A-2</td>
<td>10-25</td>
<td>30-50</td>
<td>10-35</td>
<td>5-30</td>
</tr>
<tr>
<td>Spike---------------------</td>
<td>2-6</td>
<td>Very gravelly clay, very gravelly clay loam, very gravelly sandy clay.</td>
<td>GC A-2</td>
<td>5-15</td>
<td>50-65</td>
<td>35-50</td>
<td>30-45</td>
</tr>
<tr>
<td></td>
<td>16-60</td>
<td>Extremely gravelly sandy clay loam, extremely gravelly clay loam, very gravelly loam.</td>
<td>GP-GC, GC A-2</td>
<td>10-25</td>
<td>30-50</td>
<td>10-35</td>
<td>5-30</td>
</tr>
<tr>
<td>Desatoya Variant</td>
<td>0-3</td>
<td>Very gravelly sandy loam.</td>
<td>GM-GC A-2</td>
<td>0</td>
<td>45-60</td>
<td>35-50</td>
<td>25-40</td>
</tr>
<tr>
<td></td>
<td>3-13</td>
<td>Gravelly clay loam, gravelly sandy clay loam.</td>
<td>SC CL A-6, A-7</td>
<td>0</td>
<td>70-85</td>
<td>55-70</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>26-60</td>
<td>Very gravelly sand.</td>
<td>GP-GM, SP-SM A-1</td>
<td>0</td>
<td>45-60</td>
<td>35-50</td>
<td>20-35</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fracture</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>2740*; Grassval---------</td>
<td>0-4</td>
<td>gravelly loam</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>4-13</td>
<td>gravelly clay</td>
<td>GC</td>
<td>A-6</td>
<td>0-10</td>
<td>65-75</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>indurated-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>3-10</td>
<td>very fine sandy loam.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>8-12</td>
<td>unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2780*; Desatoya--------</td>
<td>0-6</td>
<td>gravelly fine sandy loam.</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>0-10</td>
<td>65-80</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>6-13</td>
<td>gravelly clay</td>
<td>GC</td>
<td>A-7</td>
<td>0-5</td>
<td>65-75</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>5-17</td>
<td>silty clay loam</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>95-100</td>
<td>70-90</td>
</tr>
<tr>
<td></td>
<td>31-60</td>
<td>stratified very gravelly sandy loam to extremely gravelly coarse sand.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
</tr>
<tr>
<td>Pinevalley</td>
<td>0-5</td>
<td>gravelly loam</td>
<td>CL-ML, GM-GC</td>
<td>A-4</td>
<td>0</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>5-11</td>
<td>gravelly loam</td>
<td>GC</td>
<td>A-2</td>
<td>0</td>
<td>35-60</td>
<td>25-50</td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>gravelly sand</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-25</td>
<td>30-60</td>
<td>20-50</td>
</tr>
<tr>
<td>Desatoya</td>
<td>0-6</td>
<td>gravelly fine</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>0-10</td>
<td>65-80</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>6-13</td>
<td>gravelly clay</td>
<td>GC</td>
<td>A-7</td>
<td>0-5</td>
<td>65-75</td>
<td>55-70</td>
</tr>
<tr>
<td>Orovada</td>
<td>0-8</td>
<td>gravelly fine</td>
<td>GM, SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>60-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>fine sandy loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>stratified</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td>Desatoya</td>
<td>0-3</td>
<td>gravelly clay</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10</td>
<td>50-60</td>
<td>40-50</td>
</tr>
<tr>
<td></td>
<td>3-14</td>
<td>gravelly clay</td>
<td>GC</td>
<td>A-7</td>
<td>0-5</td>
<td>65-75</td>
<td>55-70</td>
</tr>
<tr>
<td>Pinevalley</td>
<td>0-5</td>
<td>gravelly loam</td>
<td>CL-ML, GM-GC</td>
<td>A-4</td>
<td>0</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>5-11</td>
<td>gravelly clay</td>
<td>GC</td>
<td>A-2</td>
<td>0</td>
<td>35-60</td>
<td>25-50</td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>stratified</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-25</td>
<td>30-60</td>
<td>20-50</td>
</tr>
</tbody>
</table>

See footnote at end of table.
| Soil name and map symbol | Depth | USDA texture | Classification | | Fragments | Percentage passing sieve number | | | Liquid limit | Plasticity index |
|---------------------------|-------|--------------|----------------|-----------------------|--------------------------|--------------------------|---------------------|------------------|-------------------|
| Grassval*:                |       |              |                |                       |                          |                          |                     |                  |                   |
| 2782*;                    | 0-4   | Gravelly loam | SM-SC          | A-2, A-4              | 0-5                      | 165-80                   | 155-70               | 45-60            | 30-45            | 20-25             | 5-10              |
|                           | 4-13  | Gravelly clay loam, gravelly loam. | GC | A-6              | 0-10                     | 65-75                    | 55-70                | 50-65            | 35-50            | 30-40             | 15-20             |
|                           | 13    | Indurated----- |                | ---                   | ---                      | ---                      | ---                  | ---              | ---              | ---               | ---               |
|                           | 3-14  | Gravelly clay loam, very gravelly clay. | GC | A-7              | 0-5                      | 65-75                    | 55-70                | 50-60            | 40-50            | 40-50             | 20-30             |
|                           | 6-60  | Extremely gravelly sandy clay loam, very gravelly loamy sand. | GP-GC, GC | A-2 | 10-25                    | 30-50                    | 10-35                | 5-30             | 5-20             | 25-35             | 10-15             |
| Desatoya, strongly sloping| 0-3   | Gravelly sandy loam. | SM-SC | A-2, A-4 | 0-10                     | 65-80                    | 50-75                | 45-60            | 25-40            | 20-30             | 5-10              |
|                           | 3-14  | Gravelly clay loam, gravelly clay. | GC | A-7 | 0-5                      | 65-75                    | 55-70                | 50-60            | 40-50            | 40-50             | 20-30             |
|                           | 11-15 | Unweathered bedrock. |                | ---                   | ---                      | ---                    | ---                | ---             | ---              | ---               | ---               |

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fracture: Unified</th>
<th>AASHTO &gt; 3 inches</th>
<th>Percentage passing sieve number 4, 10, 40, 200</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2791*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colbar</td>
<td>0-3</td>
<td>Very cobbly loam</td>
<td>CL-ML</td>
<td>A-4</td>
<td>50-60</td>
<td>90-100</td>
<td>85-95</td>
<td>75-85</td>
</tr>
<tr>
<td></td>
<td>3-22</td>
<td>Cobbly loam, gravelly clay loam, cobbly clay loam.</td>
<td>CL</td>
<td>A-6</td>
<td>10-35</td>
<td>90-95</td>
<td>70-85</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>22-26</td>
<td>Gravelly loam, cobbly loam.</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>5-30</td>
<td>75-95</td>
<td>60-90</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>26-30</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rock outcrop.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2792*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old Camp</td>
<td>0-2</td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-4</td>
<td>0-5</td>
<td>70-85</td>
<td>60-75</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>11-15</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Allor</td>
<td>0-12</td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>5-10</td>
<td>70-85</td>
<td>55-75</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td>12-34</td>
<td>Gravelly loam</td>
<td>SM</td>
<td>A-6, A-7</td>
<td>0-10</td>
<td>70-85</td>
<td>55-75</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td>34-60</td>
<td>Gravelly loamy sand, very gravelly loamy sand.</td>
<td>SM</td>
<td>A-1</td>
<td>0-10</td>
<td>55-75</td>
<td>45-65</td>
<td>30-50</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Weathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2793*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11-15</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Laped</td>
<td>0-6</td>
<td>Gravelly loam</td>
<td>SM-SC, GM-GC</td>
<td>A-4</td>
<td>30-50</td>
<td>65-80</td>
<td>50-70</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>6-18</td>
<td>Gravelly clay loam.</td>
<td>GC, SC</td>
<td>A-6, A-7</td>
<td>0-5</td>
<td>60-80</td>
<td>55-70</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>18-23</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
### TABLE 5.—ENGINEERING INDEX PROPERTIES—Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&gt; 3 inches</td>
<td>4 10 40 200 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In</td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td>Pct</td>
</tr>
<tr>
<td>2797*; Old Camp, steep</td>
<td>0-2</td>
<td>Gravelly loam</td>
<td>ISM-SC A-4</td>
<td>0-5</td>
<td>70-85</td>
<td>60-75</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, extremely</td>
<td></td>
<td></td>
<td>15-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>stony sandy clay</td>
<td></td>
<td></td>
<td>15-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, very stony</td>
<td></td>
<td></td>
<td>15-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td>15-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11-15</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td></td>
<td>15-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colbar 0-3</td>
<td>Cobbly loam</td>
<td>CL-ML A-4</td>
<td>35-45</td>
<td>90-100</td>
<td>85-95</td>
<td>75-85</td>
<td>50-60</td>
</tr>
<tr>
<td>3-22</td>
<td>Cobbly loam, gravelly clay</td>
<td>GC A-6</td>
<td>10-35</td>
<td>90-95</td>
<td>70-85</td>
<td>60-80</td>
<td>50-65</td>
</tr>
<tr>
<td>22-26</td>
<td>Gravelly loam, cobbly loam</td>
<td>SM-SC CL-ML A-4</td>
<td>5-30</td>
<td>75-95</td>
<td>60-90</td>
<td>55-75</td>
<td>35-55</td>
</tr>
<tr>
<td>26-30</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td></td>
<td></td>
<td>15-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-15</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td></td>
<td></td>
<td>15-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2798*; Old Camp</td>
<td>Gravelly loam</td>
<td>SM-SC A-4</td>
<td>0-5</td>
<td>70-85</td>
<td>60-75</td>
<td>50-65</td>
<td>35-50</td>
</tr>
<tr>
<td>11-15</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td></td>
<td></td>
<td>15-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-14</td>
<td>Very gravelly clay loam, very cobbly clay</td>
<td>GC A-2, A-6</td>
<td>A-7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14-18</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td></td>
<td></td>
<td>15-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-35</td>
<td>Indurated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td></td>
<td></td>
<td>15-25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unif. AASHTO</td>
<td>&gt; 3 inches 4 10 40 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barrier</td>
<td>0-7</td>
<td>SM, ML</td>
<td>Cobbly loam</td>
<td>A-4</td>
<td>15-30 85-95 80-90 60-75 45-60</td>
<td>20-25</td>
<td>NP-5</td>
</tr>
<tr>
<td>12-27</td>
<td></td>
<td>Cemented</td>
<td></td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27-60</td>
<td></td>
<td>Very cobbly loamy sand</td>
<td>SM A-1</td>
<td>50-60 70-90 65-85</td>
<td>40-50</td>
<td>10-25</td>
<td>---</td>
</tr>
<tr>
<td>Kobeh</td>
<td>0-7</td>
<td>SM A-1, A-2</td>
<td>Gravelly fine sandy loam</td>
<td>0</td>
<td>70-80 55-70 45-60</td>
<td>20-35</td>
<td>---</td>
</tr>
<tr>
<td>20-60</td>
<td></td>
<td>Stratified</td>
<td>gravelly fine sandy loam to very gravelly sand</td>
<td>GP-GM, GM, SM A-1</td>
<td>0</td>
<td>40-65 35-55 25-45</td>
<td>5-20</td>
</tr>
<tr>
<td>38-60</td>
<td></td>
<td>Stratified very</td>
<td>gravelly sandy loam to extremely gravelly coarse sand</td>
<td>GP-GM, GM A-1</td>
<td>0-10</td>
<td>25-40 20-35</td>
<td>10-20</td>
</tr>
<tr>
<td>Orovada</td>
<td>0-5</td>
<td>SM-SC, SM</td>
<td>Gravelly fine sandy loam</td>
<td>A-2, A-4</td>
<td>0-5</td>
<td>70-90 55-70 45-60</td>
<td>25-40</td>
</tr>
<tr>
<td></td>
<td>5-15</td>
<td>CL-ML, ML</td>
<td>Fine sandy loam, loam, silt loam</td>
<td>A-4</td>
<td>0</td>
<td>90-100 85-100 75-90</td>
<td>50-70</td>
</tr>
<tr>
<td>15-40</td>
<td></td>
<td>Fine sandy loam</td>
<td>SM-SC, SM A-2, A-4</td>
<td>0</td>
<td>90-100 80-95 70-85</td>
<td>30-45</td>
<td>20-30</td>
</tr>
<tr>
<td>40-60</td>
<td></td>
<td>Stratified gravelly loam</td>
<td>gravelly sandy loam to very gravelly sand</td>
<td>SP-SM SM A-1</td>
<td>0-5</td>
<td>75-90 65-80 30-45</td>
<td>5-15</td>
</tr>
<tr>
<td>3050----------------------</td>
<td>0-5</td>
<td>CL-ML</td>
<td>Cobbly loam</td>
<td>A-4</td>
<td>25-40 80-95 75-90 65-80</td>
<td>50-65</td>
<td>25-30</td>
</tr>
<tr>
<td>Novacan</td>
<td>5-24</td>
<td>Clay, gravelly clay</td>
<td>CL A-7</td>
<td>0-5</td>
<td>65-90 60-85 55-80</td>
<td>50-75</td>
<td>50-60</td>
</tr>
<tr>
<td>24-45</td>
<td>Cemented</td>
<td>---</td>
<td></td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-60</td>
<td></td>
<td>Very cobbly loamy sand</td>
<td>SM A-1</td>
<td>50-60 65-90 55-80</td>
<td>35-50</td>
<td>10-20</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
### TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO &lt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3071*;</td>
<td></td>
<td>0-12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allor-------------------</td>
<td></td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>5-10</td>
<td>70-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12-34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gravelly clay</td>
<td>SC</td>
<td>A-6, A-7</td>
<td>0-10</td>
<td>70-85</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, gravelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>34-60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gravelly loamy</td>
<td>SM</td>
<td>A-1</td>
<td>0-10</td>
<td>55-75</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand, very</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loamy</td>
<td>sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wieland-----------------</td>
<td></td>
<td>0-8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gravelly loam</td>
<td>GC, CL, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>60-85</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gravelly clay</td>
<td>CH, SC</td>
<td>A-7</td>
<td>0-5</td>
<td>75-95</td>
<td>55-90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, gravelly</td>
<td>SM-SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3072*;</td>
<td></td>
<td>0-12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allor-------------------</td>
<td></td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>5-10</td>
<td>70-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12-34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gravelly clay</td>
<td>SC</td>
<td>A-6, A-7</td>
<td>0-10</td>
<td>70-85</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, gravelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>34-60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gravelly loamy</td>
<td>SM</td>
<td>A-1</td>
<td>0-10</td>
<td>55-75</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand, very</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loamy</td>
<td>sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orovdada-----------------</td>
<td></td>
<td>0-8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fine sandy loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20-65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stratified fine</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam to silt loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3073*;</td>
<td></td>
<td>0-12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allor-------------------</td>
<td></td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>5-10</td>
<td>70-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12-34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gravelly clay</td>
<td>SC</td>
<td>A-6, A-7</td>
<td>0-10</td>
<td>70-85</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, gravelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>34-60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gravelly loamy</td>
<td>SM</td>
<td>A-1</td>
<td>0-10</td>
<td>55-75</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand, very</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loamy</td>
<td>sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelk---------------------</td>
<td></td>
<td>0-4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very fine sandy</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4-12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Silt loam</td>
<td>ML, CL-ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12-40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Silt loam</td>
<td>CL-ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40-60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Silty clay loam</td>
<td>ML</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>3074*;</td>
<td></td>
<td>0-12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12-34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gravelly clay</td>
<td>GC, CL, SC</td>
<td>A-6, A-7</td>
<td>0-10</td>
<td>60-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, gravelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>34-60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gravelly loamy</td>
<td>SM</td>
<td>A-1</td>
<td>0-10</td>
<td>55-75</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand, very</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loamy</td>
<td>sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
### TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5 Grovers--------------</td>
<td>0-8</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>80-95</td>
</tr>
<tr>
<td></td>
<td>0-20</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
<td>60-85</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-25</td>
<td>SC, CL</td>
<td>A-6</td>
<td>0</td>
<td>75-90</td>
<td>60-85</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>25-60</td>
<td>Cemented-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>0-6 Ricert---------------</td>
<td>0-6</td>
<td>SM, SM-SC</td>
<td>A-2, A-4</td>
<td>0</td>
<td>65-80</td>
<td>50-75</td>
<td>40-60</td>
</tr>
<tr>
<td></td>
<td>6-18</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
<td>80-90</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-25</td>
<td>SC, CL</td>
<td>A-6</td>
<td>0</td>
<td>75-90</td>
<td>60-85</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>25-60</td>
<td>Cemented-----</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>0-12 Allor---------------</td>
<td>0-12</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>5-10</td>
<td>70-80</td>
<td>55-75</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td>12-34</td>
<td>SC</td>
<td>A-6, A-7</td>
<td>0-10</td>
<td>70-85</td>
<td>55-75</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td>34-60</td>
<td>Gravelly loamy</td>
<td>SM</td>
<td>A-1</td>
<td>0-10</td>
<td>55-75</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
</tr>
<tr>
<td></td>
<td>In</td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
</tr>
<tr>
<td>Newlands-----------------</td>
<td>0-10</td>
<td>Loam----------</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0-5</td>
<td>185-95</td>
</tr>
<tr>
<td></td>
<td>10-46</td>
<td>Gravely clay</td>
<td>GC, CL</td>
<td>A-6</td>
<td>5-10</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Hapgood------------------</td>
<td>0-17</td>
<td>Gravelly loam----</td>
<td>SM-SC</td>
<td>A-4</td>
<td>5-10</td>
<td>70-80</td>
</tr>
<tr>
<td>Rock outcrop.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3093*; Packer------------</td>
<td>0-10</td>
<td>Very gravelly</td>
<td>GM-GC</td>
<td>A-2</td>
<td>5-10</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hapgood------------------</td>
<td>0-17</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>80-95</td>
<td>75-95</td>
</tr>
<tr>
<td>Hapgood------------------</td>
<td>17-40</td>
<td>Very gravelly loam, very gravelly fine sandy loam</td>
<td>GM-GC, GC</td>
<td>A-2</td>
<td>0-10</td>
<td>50-60</td>
<td>45-55</td>
</tr>
<tr>
<td>Hapgood------------------</td>
<td>0-17</td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-4</td>
<td>5-10</td>
<td>70-80</td>
<td>60-70</td>
</tr>
<tr>
<td>Hapgood------------------</td>
<td>40-60</td>
<td>Very cobbly loam, very gravelly loam</td>
<td>GC, GM-GC</td>
<td>A-2</td>
<td>15-40</td>
<td>55-65</td>
<td>50-60</td>
</tr>
<tr>
<td>Torro---------------------</td>
<td>34-60</td>
<td>Extremely gravelly sandy loam, extremely gravelly loamy coarse sand</td>
<td>GP-GM</td>
<td>A-1</td>
<td>5-15</td>
<td>30-40</td>
<td>20-30</td>
</tr>
<tr>
<td>Hackwood------------------</td>
<td>0-18</td>
<td>Gravelly loam</td>
<td>CL</td>
<td>A-6</td>
<td>40-50</td>
<td>75-80</td>
<td>65-80</td>
</tr>
<tr>
<td>Hackwood------------------</td>
<td>32-60</td>
<td>Very gravelly clay loam, very gravelly silt clay loam, very gravelly loam</td>
<td>GC</td>
<td>A-2, A-6</td>
<td>0</td>
<td>40-60</td>
<td>35-50</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHO</td>
<td>&gt; 3 inches 4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>In</td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19-23</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>7-23</td>
<td>Clay</td>
<td>[CL, CH] A-7</td>
<td>0-10</td>
<td>90-100</td>
<td>85-95</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17-21</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>4-10</td>
<td>Clay loam, gravelly clay loam</td>
<td>[CL] A-6</td>
<td>0-10</td>
<td>90-100</td>
<td>65-90</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>30-34</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>16-30</td>
<td>Very cobbly clay loam</td>
<td>[VC] A-6, A-7</td>
<td>30-45</td>
<td>60-75</td>
<td>50-65</td>
<td>45-60</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td></td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>3120*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chad</td>
<td>0-11</td>
<td>CL-ML</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td></td>
<td>15-25</td>
<td>70-80</td>
</tr>
<tr>
<td>clay, clay.</td>
<td>43-47</td>
<td>SM, SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weathered bedrock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3121*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely cobbly</td>
<td>4-10</td>
<td>ICL</td>
<td>ICL</td>
<td>A-6</td>
<td></td>
<td>0-10</td>
<td>90-100</td>
</tr>
<tr>
<td>Clay, clay.</td>
<td>30-34</td>
<td>SM, SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unweathered bedrock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Softscrabble</td>
<td>0-16</td>
<td>GM-GC,</td>
<td>GM-GC, SM-SC</td>
<td>A-4</td>
<td></td>
<td>40-50</td>
<td>65-80</td>
</tr>
<tr>
<td>Very cobbly clay</td>
<td>16-30</td>
<td>GC</td>
<td>GC</td>
<td>A-6, A-7</td>
<td></td>
<td>130-45</td>
<td>60-75</td>
</tr>
<tr>
<td>clay.</td>
<td>30-60</td>
<td>GC</td>
<td>GC</td>
<td>A-2, A-6,</td>
<td></td>
<td>0-5</td>
<td>45-60</td>
</tr>
<tr>
<td>clay.</td>
<td>18-52</td>
<td>CH, CL</td>
<td>CH</td>
<td>A-7</td>
<td></td>
<td>0-10</td>
<td>185-95</td>
</tr>
<tr>
<td>Unweathered bedrock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3122*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walti</td>
<td>0-4</td>
<td>SM-SC, GM-</td>
<td>SM-SC, GM-SC</td>
<td>A-4</td>
<td></td>
<td>5-10</td>
<td>65-80</td>
</tr>
<tr>
<td>Gravelly loam</td>
<td>4-10</td>
<td>CL-ML</td>
<td>CL-ML</td>
<td>A-6</td>
<td></td>
<td>0-10</td>
<td>90-100</td>
</tr>
<tr>
<td>Clay, gravelly clay</td>
<td>10-30</td>
<td>CL-ML</td>
<td>CL-ML</td>
<td>A-7</td>
<td></td>
<td>0-10</td>
<td>90-100</td>
</tr>
<tr>
<td>Unweathered bedrock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sumine</td>
<td>0-10</td>
<td>CL-ML</td>
<td>CL-ML</td>
<td>A-4</td>
<td></td>
<td>20-30</td>
<td>80-90</td>
</tr>
<tr>
<td>clay, very cobbly clay.</td>
<td></td>
<td></td>
<td>A-7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unweathered bedrock</td>
<td>30-34</td>
<td>GC</td>
<td>GC</td>
<td>A-2, A-6,</td>
<td></td>
<td>0-5</td>
<td>45-60</td>
</tr>
<tr>
<td>Softscrabble</td>
<td>0-16</td>
<td>SM-SC</td>
<td>SM-SC</td>
<td>A-4</td>
<td></td>
<td>25-40</td>
<td>75-90</td>
</tr>
<tr>
<td>Very cobbly clay</td>
<td>16-30</td>
<td>GC</td>
<td>GC</td>
<td>A-6, A-7</td>
<td></td>
<td>30-45</td>
<td>60-75</td>
</tr>
<tr>
<td>Clay, clay</td>
<td>30-60</td>
<td>GC</td>
<td>GC</td>
<td>A-7</td>
<td></td>
<td>0-5</td>
<td>45-60</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fracments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO &gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>3123*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walti-------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-4 Very cobbly loam</td>
<td>0-4</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>30-40</td>
<td>75-90 165-80 65-80 55-70</td>
<td>50-60</td>
<td>20-30</td>
</tr>
<tr>
<td>4-10 Clay loam,</td>
<td>4-10</td>
<td>CL</td>
<td>A-6</td>
<td>0-10</td>
<td>90-100 165-90 60-80</td>
<td>50-65</td>
<td>35-40</td>
</tr>
<tr>
<td>gravelly clay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-30 Clay, gravelly</td>
<td>10-30</td>
<td>CH, MH</td>
<td>A-7</td>
<td>0-10</td>
<td>90-100 165-90 60-80</td>
<td>50-75</td>
<td>55-65</td>
</tr>
<tr>
<td>clay.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-34 Unweathered</td>
<td>30-34</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Softscrabble------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-16 Very gravelly</td>
<td>0-16</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-5</td>
<td>45-60 35-50 30-45 20-35</td>
<td>10-30</td>
<td>20-30</td>
</tr>
<tr>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-30 Very cobbly clay</td>
<td>16-30</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>30-45</td>
<td>60-75 50-65 45-60 35-50</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-60 Gravelly clay</td>
<td>30-60</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>5-10</td>
<td>65-80 55-70 50-65 40-55</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Itca--------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-2 Extremely stony</td>
<td>0-2</td>
<td>GM-GC, GC</td>
<td>A-4, A-6</td>
<td>30-50</td>
<td>60-75 50-65 45-60 35-50</td>
<td>25-35</td>
<td>5-15</td>
</tr>
<tr>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gravelly clay,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gravelly clay.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 Unweathered</td>
<td>14</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3125*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walti-------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-4 Very cobbly loam</td>
<td>0-4</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>30-40</td>
<td>75-90 165-80 65-80 55-70</td>
<td>50-60</td>
<td>20-30</td>
</tr>
<tr>
<td>4-10 Clay loam,</td>
<td>4-10</td>
<td>CL</td>
<td>A-6</td>
<td>0-10</td>
<td>90-100 165-90 60-80</td>
<td>50-65</td>
<td>35-40</td>
</tr>
<tr>
<td>gravelly clay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-30 Clay, gravelly</td>
<td>10-30</td>
<td>CH, MH</td>
<td>A-7</td>
<td>0-10</td>
<td>90-100 165-90 60-80</td>
<td>50-75</td>
<td>55-65</td>
</tr>
<tr>
<td>clay.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-34 Unweathered</td>
<td>30-34</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Softscrabble------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-16 Very cobbly fine</td>
<td>0-16</td>
<td>GM-GC, SM-SC</td>
<td>A-4</td>
<td>40-50</td>
<td>65-80 60-75 50-65 35-50</td>
<td>20-30</td>
<td>5-10</td>
</tr>
<tr>
<td>sandy loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-30 Very cobbly</td>
<td>16-30</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>30-45</td>
<td>60-75 50-65 45-60 35-50</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>clay.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-60 Gravelly clay</td>
<td>30-60</td>
<td>GC</td>
<td>A-2, A-6, A-7</td>
<td>0-5</td>
<td>45-60 35-50 30-45 25-40</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robson------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM-SC, SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-5 Very cobbly clay</td>
<td>2-5</td>
<td>GC</td>
<td>A-7</td>
<td>30-45</td>
<td>55-75 50-65 40-60 35-50</td>
<td>40-45</td>
<td>15-20</td>
</tr>
<tr>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-15 Very cobbly clay,</td>
<td>5-15</td>
<td>GC, GM</td>
<td>A-7</td>
<td>50-80</td>
<td>60-70 50-65 40-55 35-50</td>
<td>45-55</td>
<td>20-25</td>
</tr>
<tr>
<td>extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cobbly clay.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19 Unweathered</td>
<td>15-19</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
| Soil name and | Depth | USDA texture | Classification | Fracmens | Percentage passing | Liquid limit | Plasticity index |
| map symbol | | | | Unified | AASHTO > 3 inches | sieve number | |
| | | | | | 4 | 10 | 40 | 200 | |
| 3130*: | In | | | | Pct | Pct ||
| Itca--------- | 0-9 | Very gravelly loam. | GC, GM-GC A-2 | 5-10 | 50-60 | 35-50 | 30-40 | 25-35 | 25-35 | 5-15 |
| | 17 | Unweathered bedrock. | | | | | | | | |
| Clanalpine--- | 0-10 | Very gravelly loam. | GM-GC | A-2, A-4 | 15-25 | 60-70 | 50-60 | 35-45 | 30-40 | 25-30 | 5-10 |
| | 39 | Weathered bedrock. | | | | | | | | |
| Reluctan------ | 0-9 | Very cobbly loam, gravelly clay loam. | GM-GC | A-2, A-4 | 30-50 | 55-65 | 45-60 | 40-55 | 30-45 | 25-30 | 5-10 |
| | 9-27 | Gravelly loam, gravelly clay loam. | GC, CL | A-6, A-7 | 0-15 | 65-85 | 60-75 | 55-75 | 40-60 | 35-45 | 15-20 |
| | 27 | Unweathered bedrock. | | | | | | | | |
| 3131*: | | | | | Pct | Pct ||
| Itca--------- | 0-9 | Extremely stony loam. | GM-GC, GC | A-4, A-6 | 30-50 | 60-75 | 50-65 | 45-60 | 35-50 | 25-35 | 5-15 |
| | 17-21 | Unweathered bedrock. | | | | | | | | |
| | 2-14 | Clay, gravelly clay. | CH | A-7 | 0-15 | 70-100 | 65-100 | 60-90 | 50-80 | 55-65 | 30-35 |
| | 14 | Unweathered bedrock. | | | | | | | | |
| Rock outcrop. | | | | | | | |
| 3132*: | | | | | Pct | Pct ||
| Itca--------- | 0-2 | Extremely stony loam. | GM-GC, GC | A-4, A-6 | 30-50 | 60-75 | 50-65 | 45-60 | 35-50 | 25-35 | 5-15 |
| | 14 | Unweathered bedrock. | | | | | | | | |

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments (inches)</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>3132* Soft scrubble</td>
<td>0-16</td>
<td>Cobbley loam</td>
<td>SM-SC A-4</td>
<td>25-40</td>
<td>75-90 70-85 55-70 35-50</td>
<td>20-30</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td>16-30</td>
<td>Very cobbly clay loam</td>
<td>GC A-6, A-7</td>
<td>30-45</td>
<td>60-75 50-65 45-60 35-50</td>
<td>35-45</td>
<td>15-20</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>Unweathered bedrock.</td>
<td>--- --- --- ---</td>
<td>--- --- --- ---</td>
<td>--- --- --- ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3134* Itca</td>
<td>0-9</td>
<td>Extremely cobbly fine sandy loam.</td>
<td>SM-SC A-2</td>
<td>65-65 60-75 45-55 35-50</td>
<td>20-35 20-30 5-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17-21</td>
<td>Unweathered bedrock.</td>
<td>--- --- --- ---</td>
<td>--- --- --- ---</td>
<td>--- --- --- ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>38-42</td>
<td>Weathered bedrock.</td>
<td>--- --- --- ---</td>
<td>--- --- --- ---</td>
<td>--- --- --- ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>38-60</td>
<td>Extremely gravelly sandy loam, extremely gravelly loamy coarse sand.</td>
<td>GP-GM A-1 5-15</td>
<td>30-40 20-30 10-20</td>
<td>5-10 --- NP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Unweathered bedrock.</td>
<td>--- --- --- ---</td>
<td>--- --- --- ---</td>
<td>--- --- --- ---</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fracture number</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>3135*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rock outcrop.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3136*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Itca---------</td>
<td>0-2</td>
<td>Very cobbly clay,</td>
<td>GM-GC, GC</td>
<td>A-4, A-6</td>
<td>30-50</td>
<td>60-75</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>2-14</td>
<td>Very cobbly clay,</td>
<td>CL, GC</td>
<td>A-7, A-2</td>
<td>0-55</td>
<td>140-80</td>
<td>130-75</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Roca---------</td>
<td>0-4</td>
<td>Very cobbly clay,</td>
<td>CL</td>
<td>A-6</td>
<td>50-60</td>
<td>85-100</td>
<td>75-85</td>
</tr>
<tr>
<td></td>
<td>4-24</td>
<td>Very gravelly</td>
<td>GC, SC</td>
<td>A-2</td>
<td>0-10</td>
<td>160-75</td>
<td>130-50</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Reluctan------</td>
<td>0-9</td>
<td>Cobbly loam-----</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>15-30</td>
<td>80-90</td>
<td>70-90</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3137*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Reluctan------</td>
<td>0-9</td>
<td>Very cobbly clay,</td>
<td>GM-GC</td>
<td>A-2, A-4</td>
<td>130-50</td>
<td>55-65</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>9-27</td>
<td>Gravelly loam,</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>0-15</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments sieve number</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASH70</td>
<td>&gt; 3 inches 4 10 40 200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3137*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walti---------------------</td>
<td>0-4</td>
<td>Cobbly loam----</td>
<td>CL-ML</td>
<td>A-4</td>
<td>25-40</td>
<td>70-85</td>
<td>65-80</td>
</tr>
<tr>
<td></td>
<td>4-10</td>
<td>Clay loam,</td>
<td>CL</td>
<td>A-6</td>
<td>0-10</td>
<td>90-100</td>
<td>65-90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly clay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-30</td>
<td>Clay, gravelly</td>
<td>CH, MH</td>
<td>A-7</td>
<td>0-10</td>
<td>90-100</td>
<td>65-80</td>
</tr>
<tr>
<td></td>
<td>30-34</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3140*:</td>
<td>0-7</td>
<td>Very fine sandy loam.</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
</tr>
<tr>
<td></td>
<td>7-14</td>
<td>Very fine sandy loam, silt loam, loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>80-100</td>
<td>75-100</td>
</tr>
<tr>
<td></td>
<td>42-60</td>
<td>Gravelly sandy loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenabo-------------------</td>
<td>0-4</td>
<td>Very fine sandy loam.</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>4-15</td>
<td>Clay loam, silty clay loam, gravelly clay loam.</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>95-100</td>
<td>70-95</td>
</tr>
<tr>
<td></td>
<td>28-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly coarse sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desatoya Variant---------</td>
<td>0-3</td>
<td>Gravelly fine sandy loam.</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>0</td>
<td>70-85</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>3-13</td>
<td>Gravelly clay loam, gravelly sandy clay loam.</td>
<td>SC, CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>70-85</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>26-60</td>
<td>Very gravelly sand.</td>
<td>GP-GM, SP-SM</td>
<td>A-1</td>
<td>0</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>2-5</td>
<td>Very cobbly clay loam.</td>
<td>GC</td>
<td>A-7</td>
<td>30-45</td>
<td>55-75</td>
<td>50-60</td>
</tr>
<tr>
<td></td>
<td>5-15</td>
<td>Very cobbly clay, extremely cobbly clay.</td>
<td>GC, GM</td>
<td>A-7</td>
<td>50-80</td>
<td>60-70</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>15-19</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7-19</td>
<td>Clay, gravelly clay.</td>
<td>CH</td>
<td>A-7</td>
<td>0-15</td>
<td>70-100</td>
<td>65-100</td>
</tr>
<tr>
<td></td>
<td>19-23</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>3 inches 4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3151*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ravenswood</td>
<td>0-9</td>
<td>Gravelly loam</td>
<td>GM-GC, SM-SC</td>
<td>A-2, A-4</td>
<td>0-15   60-75</td>
<td>55-70</td>
<td>45-65</td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3153*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-15</td>
<td>Very cobbley clay, extremely cobbley clay.</td>
<td>GC</td>
<td>A-7</td>
<td>50-80 60-70</td>
<td>50-65</td>
<td>45-55</td>
</tr>
<tr>
<td></td>
<td>15-19</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locane</td>
<td>0-6</td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-4, A-2</td>
<td>0-5 70-85</td>
<td>55-70</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>6-14</td>
<td>Very gravelly clay loam.</td>
<td>GC</td>
<td>A-2, A-7</td>
<td>0-10 50-65</td>
<td>35-50</td>
<td>30-45</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Softscrabble</td>
<td>0-16</td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-4</td>
<td>0-5 70-85</td>
<td>55-70</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>16-30</td>
<td>Very cobbley clay loam.</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>30-45 60-75</td>
<td>50-65</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>30-60</td>
<td>Gravelly clay loam.</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>5-10 65-80</td>
<td>55-70</td>
<td>50-65</td>
</tr>
<tr>
<td>3154*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-15</td>
<td>Very cobbley clay, extremely cobbley clay.</td>
<td>GC, GM</td>
<td>A-7</td>
<td>50-80 60-70</td>
<td>50-65</td>
<td>45-55</td>
</tr>
<tr>
<td></td>
<td>15-19</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locane</td>
<td>0-6</td>
<td>Very gravelly fine sandy loam.</td>
<td>GM-GC</td>
<td>A-2</td>
<td>5-15 50-65</td>
<td>30-45</td>
<td>25-40</td>
</tr>
<tr>
<td></td>
<td>6-14</td>
<td>Very gravelly clay loam.</td>
<td>GC</td>
<td>A-2, A-7</td>
<td>0-10 50-65</td>
<td>35-50</td>
<td>30-45</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rock outcrop.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3155*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-15</td>
<td>Very cobbley clay, extremely cobbley clay.</td>
<td>GC, GM</td>
<td>A-7</td>
<td>50-80 60-70</td>
<td>50-65</td>
<td>45-55</td>
</tr>
<tr>
<td></td>
<td>15-19</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
</tr>
<tr>
<td>In</td>
<td></td>
<td></td>
<td>Pet</td>
<td>Pet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3155*;</td>
<td>0-9</td>
<td>Very gravelly loam.</td>
<td>GC, GM-GC</td>
<td>A-2</td>
<td>5-10</td>
<td>50-60</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Unweathered bedrock.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Soft scrubble-------------</td>
<td>0-16</td>
<td>Gravelly loam----</td>
<td>SM-SC</td>
<td>A-4</td>
<td>0-5</td>
<td>70-85</td>
</tr>
<tr>
<td>16-50 Very cobbly clay loam</td>
<td>SC</td>
<td>A-6, A-7</td>
<td>30-45</td>
<td>60-75</td>
<td>50-65</td>
<td>45-60</td>
</tr>
<tr>
<td>30-60 Gravelly clay loam.</td>
<td>SC</td>
<td>A-6, A-7</td>
<td>5-10</td>
<td>65-80</td>
<td>55-70</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>3170*;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-16 Gravelly clay loam, gravelly clay loam.</td>
<td>GC</td>
<td>A-2, A-6</td>
<td>0-10</td>
<td>65-80</td>
<td>50-75</td>
<td>35-60</td>
</tr>
<tr>
<td></td>
<td>16-20</td>
<td>Unweathered bedrock.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rubble land.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Punchbowl---------------</td>
<td>0-3</td>
<td>Cobble loam-----</td>
<td>SM, ML</td>
<td>A-4</td>
<td>25-40</td>
<td>80-90</td>
</tr>
<tr>
<td>3-7 Loam, gravelly loam.</td>
<td>SC, GC, CL</td>
<td>A-6</td>
<td>0-5</td>
<td>70-100</td>
<td>65-95</td>
<td>60-85</td>
</tr>
<tr>
<td>7-11 Gravelly clay loam, gravelly sandy clay loam.</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>0-5</td>
<td>55-65</td>
<td>50-60</td>
<td>45-55</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Unweathered bedrock.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Newlands---------------</td>
<td>0-10</td>
<td>Loam---------------</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0-5</td>
<td>85-95</td>
</tr>
<tr>
<td>10-46 Gravelly clay loam.</td>
<td>GC</td>
<td>A-6</td>
<td>5-10</td>
<td>60-75</td>
<td>55-70</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>Unweathered bedrock.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Packer------------------</td>
<td>0-10</td>
<td>Very gravelly loam.</td>
<td>GM-GC</td>
<td>A-2</td>
<td>5-10</td>
<td>45-60</td>
</tr>
<tr>
<td>Hapgood-----------------</td>
<td>0-17</td>
<td>Gravelly loam----</td>
<td>SM-SC</td>
<td>A-4</td>
<td>5-10</td>
<td>70-80</td>
</tr>
<tr>
<td>40-60 Very cobbly loam, very gravelly loam.</td>
<td>GC</td>
<td>A-2</td>
<td>15-40</td>
<td>55-65</td>
<td>50-60</td>
<td>35-45</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Newlands-----------------</td>
<td>0-10</td>
<td>Extremely boudery loam.</td>
<td>CL-ML, CL, A-4, A-6</td>
<td>50-65</td>
<td>75-90</td>
<td>65-80</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>10-46</td>
<td>Gravelly clay loam.</td>
<td>GC, CL, A-6</td>
<td>5-10</td>
<td>60-75</td>
<td>55-70</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Hapgood--------------------</td>
<td>0-17</td>
<td>Gravelly loam.</td>
<td>SM-SC, A-4</td>
<td>5-10</td>
<td>70-80</td>
<td>60-75</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>16-30</td>
<td>Very cobbley clay loam.</td>
<td>GC, A-6, A-7</td>
<td>30-45</td>
<td>60-75</td>
<td>50-65</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>Weathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Walti--------------------</td>
<td>0-4</td>
<td>Very cobbley loam</td>
<td>CL-ML, ML, A-4</td>
<td>30-40</td>
<td>75-90</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>4-10</td>
<td>Clay loam.</td>
<td>CL, A-6</td>
<td>0-10</td>
<td>90-100</td>
<td>65-90</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>30-34</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Softscrable---------------</td>
<td>0-16</td>
<td>Very gravelly fine sandy loam.</td>
<td>GM-GC, A-2</td>
<td>5-5</td>
<td>45-60</td>
<td>35-50</td>
<td>25-45</td>
</tr>
<tr>
<td></td>
<td>16-30</td>
<td>Very cobbley clay loam.</td>
<td>GC, A-6, A-7</td>
<td>30-45</td>
<td>60-75</td>
<td>50-65</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>30-60</td>
<td>gravelly clay loam.</td>
<td>GC, CL, A-6, A-7</td>
<td>5-10</td>
<td>65-80</td>
<td>55-70</td>
<td>50-65</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>3192*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-10</td>
<td>Clay loam, gravelly clay loam.</td>
<td>CL A-6</td>
<td>0-10</td>
<td>90-100</td>
<td>65-90</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>10-30</td>
<td>Gravelly clay, clay.</td>
<td>CH, MH A-7</td>
<td>0-10</td>
<td>90-100</td>
<td>65-90</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>30-34</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>4-14</td>
<td>Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.</td>
<td>GC A-2</td>
<td>0-45</td>
<td>40-55</td>
<td>30-45</td>
<td>25-45</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3200*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dewar</td>
<td>0-4</td>
<td>Gravelly loamy clay, gravelly clay loam.</td>
<td>GC, CL, SC A-6</td>
<td>0-5</td>
<td>60-90</td>
<td>55-80</td>
<td>45-80</td>
</tr>
<tr>
<td></td>
<td>4-14</td>
<td>Gravelly silty clay loam, gravelly clay loam.</td>
<td>GC, CL, SC A-6, A-7</td>
<td>0-10</td>
<td>65-90</td>
<td>60-80</td>
<td>55-80</td>
</tr>
<tr>
<td></td>
<td>14-50</td>
<td>Indurated</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3210*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Argixerolls</td>
<td>0-4</td>
<td>Gravelly coarse sandy loam.</td>
<td>SM-SC A-2</td>
<td>0-5</td>
<td>80-95</td>
<td>50-75</td>
<td>30-50</td>
</tr>
<tr>
<td></td>
<td>4-15</td>
<td>Sandy clay loam, gravelly clay loam.</td>
<td>SC A-2, A-6</td>
<td>0</td>
<td>85-100</td>
<td>85-95</td>
<td>60-85</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Torripsammentic Haploxerolls</td>
<td>0-2</td>
<td>Cobbly loamy clay, gravelly sand.</td>
<td>GM A-1</td>
<td>30-45</td>
<td>90-100</td>
<td>85-95</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>2-7</td>
<td>Loamy coarse sand, gravelly loamy coarse sand</td>
<td>SM A-1</td>
<td>0</td>
<td>90-100</td>
<td>50-95</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>51</td>
<td>Unweathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at the end of the table.
<table>
<thead>
<tr>
<th>Soil name and</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3</td>
<td>4</td>
</tr>
<tr>
<td>3231*:</td>
<td>In</td>
<td></td>
<td></td>
<td>Pot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stingdorn,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>moderately</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7-15</td>
<td>Very</td>
<td>GC</td>
<td>A-6</td>
<td>30-50</td>
<td>60-75</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>15-20</td>
<td>Indurated</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Stingdorn,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>moderately</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7-15</td>
<td>Very</td>
<td>GC</td>
<td>A-6</td>
<td>30-50</td>
<td>60-75</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>15-20</td>
<td>Indurated</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Hooplite------</td>
<td>0-4</td>
<td>Very</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>4-8</td>
<td>Very</td>
<td>GC</td>
<td>A-2, A-6</td>
<td>0-15</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td>8</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3251*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caphor--------</td>
<td>0-7</td>
<td>Fine</td>
<td>SM-SC, SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>90-100</td>
<td>80-95</td>
</tr>
<tr>
<td></td>
<td>7-17</td>
<td>Sandy</td>
<td>SM-SC, SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>90-100</td>
<td>80-95</td>
</tr>
<tr>
<td></td>
<td>17-35</td>
<td>Sandy</td>
<td>SM, SM-SC</td>
<td>A-2</td>
<td>0</td>
<td>90-100</td>
<td>80-95</td>
</tr>
<tr>
<td></td>
<td>35-60</td>
<td>Stratified</td>
<td>GP-GM, GM,</td>
<td>A-1</td>
<td>0-10</td>
<td>50-75</td>
<td>35-60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly</td>
<td>SP-SM, SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>coarse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand to</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>very</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loamy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-15</td>
<td>Sandy</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>95-100</td>
<td>70-90</td>
</tr>
<tr>
<td></td>
<td>15-28</td>
<td>Indurated</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>coarse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>In</td>
<td>Pct</td>
<td></td>
</tr>
<tr>
<td>3251*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam</td>
<td>CL, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>95-100 90-100 70-95 45-65 30-40 10-20</td>
</tr>
<tr>
<td></td>
<td>5-26</td>
<td>Loam, clay loam,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26-33</td>
<td>Cemented------</td>
<td>---</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>33-60</td>
<td>Fine sandy loam,</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>90-100 85-95 50-65 15-30 --- NP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loamy sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3252*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caphor--------</td>
<td>0-7</td>
<td>Fine sandy loam</td>
<td>SM-SC, SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>90-100 80-95 65-85 25-40 20-30 NP-10</td>
</tr>
<tr>
<td></td>
<td>7-17</td>
<td>Fine sandy loam,</td>
<td>SM-SC, SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>90-100 80-95 65-85 20-40 20-30 NP-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17-35</td>
<td>Fine sandy loam,</td>
<td>SM, SM-SC</td>
<td>A-2</td>
<td>0</td>
<td>90-100 80-95 65-85 20-35 20-30 NP-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loamy sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>35-60</td>
<td>Stratified</td>
<td>GP-GM, GM,</td>
<td>A-1</td>
<td>0-10</td>
<td>50-75 135-60 20-35 5-20 --- NP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly coarse</td>
<td>SP-SM, SM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand to very</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loamy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Batan--------</td>
<td>0-5</td>
<td>Silt loam-------</td>
<td>ML</td>
<td>A-4</td>
<td>0</td>
<td>100 100 95-100 85-95 30-35 5-10</td>
</tr>
<tr>
<td></td>
<td>5-60</td>
<td>Stratified silt</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>100 100 95-100 85-95 30-40 15-25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam to silty</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsel--------</td>
<td>0-8</td>
<td>Gravelly fine</td>
<td>SM-SC</td>
<td>A-2</td>
<td>0</td>
<td>75-85 55-75 40-60 25-35 25-30 5-10</td>
</tr>
<tr>
<td></td>
<td>8-18</td>
<td>Gravelly clay</td>
<td>SC</td>
<td>A-6</td>
<td>0</td>
<td>75-85 55-75 45-60 35-45 35-40 15-20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, gravelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18-31</td>
<td>Gravelly sandy</td>
<td>SM-SC</td>
<td>A-2</td>
<td>0</td>
<td>60-75 50-70 35-50 20-35 20-30 5-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, gravelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>31-60</td>
<td>Very gravelly</td>
<td>GP-GM, GP</td>
<td>A-1</td>
<td>0</td>
<td>40-50 20-35 10-25 0-10 --- NP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand, very</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loamy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand, extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3253*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caphor--------</td>
<td>0-7</td>
<td>Gravelly fine</td>
<td>SM-SC, SM</td>
<td>A-2, A-1</td>
<td>0-5</td>
<td>65-80 55-75 45-65 15-30 20-30 NP-10</td>
</tr>
<tr>
<td></td>
<td>7-17</td>
<td>Sandy loam, fine</td>
<td>SM-SC, SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>90-100 80-95 65-85 25-40 20-30 NP-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17-35</td>
<td>Sandy loam, fine</td>
<td>SM, SM-SC</td>
<td>A-2</td>
<td>0</td>
<td>90-100 80-95 65-85 20-35 20-30 NP-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>35-60</td>
<td>Stratified</td>
<td>GP-GM, GM,</td>
<td>A-1</td>
<td>0-10</td>
<td>50-75 35-60 20-35 5-20 --- NP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly coarse</td>
<td>SP-SM, SM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand to very</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loamy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th></th>
<th>Fragment size</th>
<th>Percentage passing sieve number-</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3</td>
<td>4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>3253*; Caphor, moderately saline</td>
<td>0-7</td>
<td>Fine sandy loam, sandy loam</td>
<td>SM-SC, SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>90-100</td>
<td>80-95</td>
<td>65-85</td>
</tr>
<tr>
<td></td>
<td>7-17</td>
<td>Fine sandy loam, sandy loam</td>
<td>SM-SC, SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>90-100</td>
<td>80-95</td>
<td>65-85</td>
</tr>
<tr>
<td></td>
<td>17-35</td>
<td>Fine sandy loam, sandy loam</td>
<td>SM, SM-SC</td>
<td>A-2</td>
<td>0</td>
<td>90-100</td>
<td>80-95</td>
<td>65-85</td>
</tr>
<tr>
<td></td>
<td>35-60</td>
<td>Stratified gravelly coarse sand to very gravelly loamy sand</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-10</td>
<td>50-75</td>
<td>35-60</td>
<td>120-35</td>
</tr>
<tr>
<td>3270----------------------</td>
<td>0-4</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-100</td>
<td>75-90</td>
</tr>
<tr>
<td>Koyen</td>
<td>4-14</td>
<td>Sandy loam------</td>
<td>SM</td>
<td>A-4</td>
<td>0</td>
<td>90-95</td>
<td>85-95</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>14-60</td>
<td>Stratified loam to gravelly loamy sand</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>80-90</td>
<td>75-85</td>
<td>50-60</td>
</tr>
<tr>
<td></td>
<td>5-26</td>
<td>Loam, clay loam, sandy clay loam</td>
<td>CL, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>95-100</td>
<td>90-100</td>
<td>70-95</td>
</tr>
<tr>
<td></td>
<td>26-33</td>
<td>Cemented--------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>33-60</td>
<td>Fine sandy loam, sandy loam</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>5-26</td>
<td>Loam, clay loam, sandy clay loam</td>
<td>CL, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>95-100</td>
<td>90-100</td>
<td>70-95</td>
</tr>
<tr>
<td></td>
<td>26-33</td>
<td>Cemented--------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>33-60</td>
<td>Fine sandy loam, sandy loam</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
<td>50-65</td>
</tr>
<tr>
<td>Buffaran-------------------</td>
<td>0-5</td>
<td>Gravelly loam----</td>
<td>GC, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>65-80</td>
<td>55-70</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>5-16</td>
<td>Gravelly clay, gravelly clay loam, clay</td>
<td>CL, CH</td>
<td>A-7</td>
<td>0-5</td>
<td>75-90</td>
<td>70-85</td>
<td>65-80</td>
</tr>
<tr>
<td></td>
<td>16-27</td>
<td>Indurated--------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Cemented--------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Orovada-------------------</td>
<td>0-8</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine sandy loam to silt loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
<td>60-80</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
</tr>
<tr>
<td></td>
<td>5-26</td>
<td>Loam, clay loam, sandy clay loam</td>
<td>ICL, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>26-33</td>
<td>Cemented----</td>
<td>---</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>33-60</td>
<td>Fine sandy loam, sandy loam, loamy sand</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>90-100</td>
</tr>
<tr>
<td>3341*: Allor------------</td>
<td>0-12</td>
<td>Gravelly loam--</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>5-10</td>
<td>70-80</td>
</tr>
<tr>
<td></td>
<td>12-34</td>
<td>Gravelly clay loam, sandy clay loam</td>
<td>SC</td>
<td>A-6, A-7</td>
<td>0-10</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td>34-60</td>
<td>Gravelly loamy sand, very gravelly loamy sand</td>
<td>SM</td>
<td>A-1</td>
<td>0-10</td>
<td>55-75</td>
</tr>
<tr>
<td>3342*: Orovada----------</td>
<td>0-8</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Fine sandy loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
</tr>
<tr>
<td></td>
<td>20-60</td>
<td>Stratified fine sandy loam to silt loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
</tr>
<tr>
<td></td>
<td>5-17</td>
<td>Extremely channy loam, very channy loam</td>
<td>GM</td>
<td>A-2, A-4, 10-55</td>
<td>30-50</td>
<td>20-50</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>29-33</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rock outcrop.-----------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-17</td>
<td>Extremely channy loam, very channy loam</td>
<td>GM</td>
<td>A-2, A-4, 10-55</td>
<td>30-50</td>
<td>20-50</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at the end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&gt; 3</td>
<td>3</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Happgood</td>
<td>0-17</td>
<td>Gravelly loam</td>
<td>SM-SC, A-4</td>
<td>5-10</td>
<td>70-80</td>
<td>60-75</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>43-47</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Zoesta</td>
<td>0-7</td>
<td>Cobbly loam</td>
<td>CL-ML, ML, A-4</td>
<td>25-40</td>
<td>80-90</td>
<td>75-90</td>
<td>65-80</td>
</tr>
<tr>
<td></td>
<td>7-23</td>
<td>Clay</td>
<td>CL, CH, A-7</td>
<td>0-10</td>
<td>90-100</td>
<td>85-95</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>23-31</td>
<td>Gravelly clay</td>
<td>GC, CL, A-6, A-7</td>
<td>0</td>
<td>60-75</td>
<td>55-70</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>2-5</td>
<td>Very gravelly</td>
<td>GC, A-7</td>
<td>30-45</td>
<td>55-75</td>
<td>50-60</td>
<td>40-60</td>
</tr>
<tr>
<td></td>
<td>15-19</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>16-30</td>
<td>Very gravelly</td>
<td>GC, A-6, A-7</td>
<td>30-45</td>
<td>60-75</td>
<td>50-65</td>
<td>45-60</td>
</tr>
<tr>
<td>3415*</td>
<td>0-7</td>
<td>Cobbly loam</td>
<td>CL-ML, ML, A-4</td>
<td>25-40</td>
<td>80-90</td>
<td>75-90</td>
<td>65-80</td>
</tr>
<tr>
<td></td>
<td>7-23</td>
<td>Clay</td>
<td>CL, CH, A-7</td>
<td>0-10</td>
<td>90-100</td>
<td>85-95</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>23-31</td>
<td>Gravelly clay</td>
<td>GC, CL, A-6, A-7</td>
<td>0</td>
<td>60-75</td>
<td>55-70</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>4-30</td>
<td>Gravelly clay</td>
<td>CL, CH, A-7</td>
<td>0-5</td>
<td>80-100</td>
<td>70-90</td>
<td>65-80</td>
</tr>
<tr>
<td></td>
<td>30-60</td>
<td>Gravelly loam</td>
<td>SM-SC, GM-GC, A-4</td>
<td>0-10</td>
<td>65-80</td>
<td>55-70</td>
<td>50-65</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments &gt; 3 inches</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoesa</td>
<td>0-7</td>
<td>Cobbly loam</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>25-40</td>
<td>80-90</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>7-23</td>
<td>Clay</td>
<td>CL, CH</td>
<td>A-7</td>
<td>1-0</td>
<td>90-100</td>
<td>75-90</td>
</tr>
<tr>
<td></td>
<td>23-31</td>
<td>Gravelly clay</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>60-75</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, gravelly clay</td>
<td></td>
<td></td>
<td>31-60</td>
<td>45-55</td>
<td>30-45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay, loam, very gravelly loam.</td>
<td></td>
<td></td>
<td>3421*</td>
<td>25-35</td>
<td>10-15</td>
</tr>
<tr>
<td>Rocsa</td>
<td>0-4</td>
<td>Very cobble loam</td>
<td>CL</td>
<td>A-6</td>
<td>50-60</td>
<td>85-100</td>
<td>75-85</td>
</tr>
<tr>
<td></td>
<td>4-24</td>
<td>Very gravelly clay</td>
<td>GC, SC</td>
<td>A-2</td>
<td>0-10</td>
<td>60-75</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, gravelly clay</td>
<td></td>
<td></td>
<td>24</td>
<td>Unweathered bedrock.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-60</td>
<td>Gravelly clay</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>5-10</td>
<td>65-80</td>
</tr>
<tr>
<td>Softscrabble</td>
<td>0-16</td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-4</td>
<td>0-5</td>
<td>70-85</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>16-30</td>
<td>Very cobble clay</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>30-45</td>
<td>60-75</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-60</td>
<td>Gravelly clay</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>5-10</td>
<td>65-80</td>
</tr>
<tr>
<td>Torro</td>
<td>0-10</td>
<td>Gravelly loam</td>
<td>SM</td>
<td>A-4</td>
<td>15-25</td>
<td>70-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>10-34</td>
<td>Extremely gravelly clay</td>
<td>GC</td>
<td>A-2</td>
<td>10-25</td>
<td>130-50</td>
<td>15-25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, extremely gravelly loam.</td>
<td></td>
<td></td>
<td>34-60</td>
<td>5-15</td>
<td>15-35</td>
</tr>
<tr>
<td>Softscrabble</td>
<td>0-16</td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-4</td>
<td>0-5</td>
<td>70-85</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>16-30</td>
<td>Very cobble clay</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>30-45</td>
<td>60-75</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-60</td>
<td>Gravelly clay</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>5-10</td>
<td>65-80</td>
</tr>
<tr>
<td>Torro</td>
<td>0-10</td>
<td>Gravelly loam</td>
<td>SM</td>
<td>A-4</td>
<td>15-25</td>
<td>70-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>10-34</td>
<td>Extremely gravelly clay</td>
<td>GC</td>
<td>A-2</td>
<td>10-25</td>
<td>130-50</td>
<td>15-25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, extremely gravelly loam.</td>
<td></td>
<td></td>
<td>34-60</td>
<td>5-15</td>
<td>15-35</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In</td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
</tr>
<tr>
<td>3422*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Torro--------------------</td>
<td>0-10</td>
<td>gravelly loam--</td>
<td>SM</td>
<td>A-4</td>
<td>5-10</td>
<td>70-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>38-60</td>
<td>extremely gravelly sandy loam, extremely gravelly loamy coarse sand.</td>
<td>GP-GM</td>
<td>A-1</td>
<td>5-15</td>
<td>30-40</td>
<td>20-30</td>
</tr>
<tr>
<td>3423*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14-60</td>
<td>very gravelly clay loam, very gravelly loam.</td>
<td>GC</td>
<td>A-2, A-6</td>
<td>5-10</td>
<td>50-65</td>
<td>35-50</td>
</tr>
<tr>
<td>Cleavage-----------------</td>
<td>0-4</td>
<td>extremely gravelly loam.</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10</td>
<td>35-45</td>
<td>15-25</td>
</tr>
<tr>
<td></td>
<td>4-15</td>
<td>very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.</td>
<td>GC</td>
<td>A-2</td>
<td>0-45</td>
<td>40-55</td>
<td>30-45</td>
</tr>
<tr>
<td></td>
<td>15-19</td>
<td>unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Softscraibble------------</td>
<td>0-16</td>
<td>gravelly loam--</td>
<td>SM-SC</td>
<td>A-4</td>
<td>0-5</td>
<td>70-85</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td>16-30</td>
<td>very cobbly clay loam.</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>30-45</td>
<td>60-75</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>30-60</td>
<td>gravelly clay loam.</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>5-10</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td>3450*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reluctan----------------</td>
<td>0-9</td>
<td>very cobbly clay loam.</td>
<td>GM-GC</td>
<td>A-2, A-4</td>
<td>30-50</td>
<td>55-65</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>9-27</td>
<td>gravelly clay loam.</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>0-15</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>2-15</td>
<td>very cobbly clay, extremely cobbly clay.</td>
<td>GC, GM</td>
<td>A-7</td>
<td>50-80</td>
<td>60-70</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>15-19</td>
<td>unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
### TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments exceeding sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>0-3</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>3450*:</td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
</tr>
<tr>
<td>Cleavage</td>
<td>0-4</td>
<td>Extremely gravelly loam.</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10</td>
<td>35-65</td>
</tr>
<tr>
<td></td>
<td>4-18</td>
<td>Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.</td>
<td>GC</td>
<td>A-2</td>
<td>0-45</td>
<td>40-65</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3453*:</td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9-27</td>
<td>Gravelly clay loam, gravelly clay loam.</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>0-15</td>
<td>65-85</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>6-14</td>
<td>Very gravelly clay loam.</td>
<td>GC</td>
<td>A-2, A-7</td>
<td>0-10</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Itca</td>
<td>0-9</td>
<td>Very cobbly clay loam, very gravelly clay, extremely gravelly clay.</td>
<td>GM-GC, GC, CL, GC</td>
<td>A-4, A-6</td>
<td>30-50</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>17-21</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3455*:</td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
</tr>
<tr>
<td>Reluctan</td>
<td>0-9</td>
<td>Very cobbly clay loam.</td>
<td>GM-GC</td>
<td>A-2, A-4</td>
<td>10-50</td>
<td>55-65</td>
</tr>
<tr>
<td></td>
<td>9-27</td>
<td>Gravelly clay loam, gravelly clay loam.</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>0-15</td>
<td>65-85</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rocca</td>
<td>0-5</td>
<td>Very cobbly clay loam, very gravelly clay.</td>
<td>CL, SC</td>
<td>A-2</td>
<td>0-10</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>5-27</td>
<td>Very gravelly clay loam, very gravelly clay.</td>
<td>GC, SC</td>
<td>A-2</td>
<td>0-10</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>27-31</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Colbar</td>
<td>0-3</td>
<td>Cobbly loam.</td>
<td>CL-ML</td>
<td>A-4</td>
<td>35-45</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>3-22</td>
<td>Cobbly clay loam, gravelly clay loam, gravelly clay loam.</td>
<td>CL</td>
<td>A-6</td>
<td>10-35</td>
<td>90-95</td>
</tr>
<tr>
<td></td>
<td>22-26</td>
<td>Gravelly clay loam, cobbly loam.</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>5-30</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>26-30</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3457*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reluctan------</td>
<td>0-9</td>
<td>Very cobbly loam</td>
<td>GM-GC</td>
<td>A-2, A-4</td>
<td>30-50</td>
<td>55-65</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gravelly loam</td>
<td>GC, CL</td>
<td>A-6, A-7</td>
<td>0-15</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Unweathered</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Clanalpine----</td>
<td>0-10</td>
<td>Very gravelly loam</td>
<td>GM-GC</td>
<td>A-2, A-4</td>
<td>15-25</td>
<td>60-70</td>
<td>50-60</td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>Weathered bedrock</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rocasa--------</td>
<td>0-4</td>
<td>Very cobbly loam</td>
<td>CL</td>
<td>A-6</td>
<td>50-60</td>
<td>85-100</td>
<td>75-85</td>
</tr>
<tr>
<td></td>
<td>4-24</td>
<td>Very gravelly loam</td>
<td>GC, SC</td>
<td>A-2</td>
<td>0-10</td>
<td>60-75</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Unweathered bedrock</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3461*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>34-60</td>
<td>Extremely gravelly sandy loam</td>
<td>GP-GM</td>
<td>A-1</td>
<td>5-15</td>
<td>30-40</td>
<td>20-30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Extremely gravelly loamy coarse sand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubble land.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleavage------</td>
<td>0-4</td>
<td>Extremely gravelly loam</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10</td>
<td>35-45</td>
<td>15-25</td>
</tr>
<tr>
<td></td>
<td>15-19</td>
<td>Unweathered bedrock</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Torro--------</td>
<td>0-10</td>
<td>Extremely gravelly loam.</td>
<td>GM A-1</td>
<td>5-10</td>
<td>45-60</td>
<td>120-30</td>
<td>15-25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loam, extremely gravelly clay loam, gravelly sandy clay loam.</td>
<td>GP-GC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>34-60</td>
<td>Extremely gravelly sandy loam, extremely gravelly loamy coarse sand.</td>
<td>GP-GM A-1</td>
<td>5-15</td>
<td>30-40</td>
<td>120-30</td>
<td>10-20</td>
</tr>
<tr>
<td>Relucatan----</td>
<td>0-9</td>
<td>Very cobbly loam</td>
<td>GM-GC A-2, A-4</td>
<td>30-50</td>
<td>55-65</td>
<td>45-60</td>
<td>140-55</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cleavage-----</td>
<td>0-4</td>
<td>Extremely gravelly loam.</td>
<td>GM-GC A-2</td>
<td>0-10</td>
<td>35-45</td>
<td>15-25</td>
<td>10-25</td>
</tr>
<tr>
<td></td>
<td>4-15</td>
<td>Very cobbly loam, gravelly clay loam, very gravelly loamy bedrock.</td>
<td>GC A-2</td>
<td>0-45</td>
<td>40-55</td>
<td>130-45</td>
<td>125-45</td>
</tr>
<tr>
<td></td>
<td>15-19</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3463*: Torro---------</td>
<td>0-10</td>
<td>Extremely gravelly loam.</td>
<td>GM A-1</td>
<td>5-10</td>
<td>45-60</td>
<td>120-30</td>
<td>15-25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loam, extremely gravelly clay loam, gravelly sandy clay loam.</td>
<td>GP-GC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>34-60</td>
<td>Extremely gravelly sandy loam, extremely gravelly loamy coarse sand.</td>
<td>GP-GM A-1</td>
<td>5-15</td>
<td>30-40</td>
<td>120-30</td>
<td>10-20</td>
</tr>
<tr>
<td>Clanalpine----</td>
<td>0-10</td>
<td>Very cobbly loam</td>
<td>GM-GC, SM-GC A-4</td>
<td>25-40</td>
<td>65-75</td>
<td>55-70</td>
<td>145-60</td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

<table>
<thead>
<tr>
<th>Soil name and</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt; 3 inches</td>
<td>Pct</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>10</td>
<td>40</td>
<td>200</td>
</tr>
</tbody>
</table>

3463*:

| Itca---------- |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |

3464*:

| Torro--------- |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |

3465*:

| Torro--------- |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |
|               |       |              |                |           |                    |              |                  |

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3465*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>Gravelly clay loam.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Softscrable</td>
<td>0-16</td>
<td>Loam.</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>0-5</td>
<td>85-100</td>
</tr>
<tr>
<td></td>
<td>16-30</td>
<td>Very cobbly clay loam.</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>30-45</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>30-60</td>
<td>Very gravelly clay loam.</td>
<td>GC</td>
<td>A-2, A-6</td>
<td>0-5</td>
<td>45-60</td>
</tr>
<tr>
<td>3562*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locane</td>
<td>0-6</td>
<td>Gravelly loam.</td>
<td>SM-SC</td>
<td>A-4, A-2</td>
<td>0-5</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td>6-14</td>
<td>Very gravelly clay loam.</td>
<td>GC</td>
<td>A-2, A-7</td>
<td>0-10</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Coztur</td>
<td>0-11</td>
<td>Gravelly loam.</td>
<td>SM-GC, SM-SC</td>
<td>A-2, A-4</td>
<td>0-10</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>11-17</td>
<td>Loam, clay loam.</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>3-7</td>
<td>Loam, gravelly clay loam.</td>
<td>GC, CL</td>
<td>A-6</td>
<td>0-5</td>
<td>70-100</td>
</tr>
<tr>
<td></td>
<td>7-11</td>
<td>Gravelly clay loam.</td>
<td>GC</td>
<td>A-6, A-7</td>
<td>0-5</td>
<td>55-60</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3563*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locane</td>
<td>0-6</td>
<td>Gravelly sandy loam.</td>
<td>SM-SC</td>
<td>A-4, A-2</td>
<td>0-5</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td>6-14</td>
<td>Very gravelly clay loam.</td>
<td>GC</td>
<td>A-2, A-7</td>
<td>0-10</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Muni</td>
<td>0-3</td>
<td>Gravelly sandy loam.</td>
<td>SM-SC</td>
<td>A-2</td>
<td>0</td>
<td>80-90</td>
</tr>
<tr>
<td></td>
<td>3-18</td>
<td>Sandy clay loam, clay loam.</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>18-49</td>
<td>Cemented</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>49-60</td>
<td>Very gravelly loamy sand.</td>
<td>GM, SM</td>
<td>A-1</td>
<td>0-10</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>2-10</td>
<td>Very gravelly clay loam.</td>
<td>GC</td>
<td>A-2, A-7</td>
<td>0-10</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>10-14</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at the end of the table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3625*: Minat-------------</td>
<td>0-9</td>
<td>Very gravelly fine sandy loam.</td>
<td>GM-GC</td>
<td>A-2</td>
<td>5-10</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>27-60</td>
<td>Very gravelly loam, very gravelly fine sandy loam.</td>
<td>GM-GC, GC</td>
<td>A-2</td>
<td>0-10</td>
<td>45-60</td>
<td>30-50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11-17</td>
<td>Loam, clay loam.</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>10-14</td>
<td>Unweathered bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3740----------------------</td>
<td>0-3</td>
<td>Silt loam.</td>
<td>CL-ML, ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>3741*: Kelk-------------</td>
<td>0-14</td>
<td>Very fine sandy loam.</td>
<td>CL-ML</td>
<td>A-4</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>14-51</td>
<td>Silt loam.</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td></td>
<td>51-60</td>
<td>Silt loam.</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASH70</td>
<td>&gt; 3 inches 4 10 40 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In</td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td>Pct</td>
<td></td>
</tr>
<tr>
<td>3741*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Settlement---------------</td>
<td>0-16</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>90-100  80-95 70-85 20-35</td>
</tr>
<tr>
<td></td>
<td>16-36</td>
<td>Silty clay loam</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>100   100   80-100 75-85</td>
</tr>
<tr>
<td></td>
<td>36-60</td>
<td>Stratified very</td>
<td>GC, CL</td>
<td>A-4, A-6</td>
<td>0-5</td>
<td>60-90   60-85 45-80 35-60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td>GM-GC, CL-MGCL</td>
<td>CL-MGCL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3742*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelk---------------------</td>
<td>0-14</td>
<td>Very fine sandy loam</td>
<td>CL-MGCL</td>
<td>A-4</td>
<td>0</td>
<td>100   100   90-95 65-75</td>
</tr>
<tr>
<td></td>
<td>14-51</td>
<td>Silty clay loam</td>
<td>CL-MGCL, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>95-100  95-100 95-100 85-95</td>
</tr>
<tr>
<td></td>
<td>51-60</td>
<td>Silty clay loam</td>
<td>CL-MGCL, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>95-100  90-100 90-100 80-95</td>
</tr>
<tr>
<td>Ocala--------------------</td>
<td>0-4</td>
<td>Silty loam, silty clay loam</td>
<td>ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100   100   95-100 85-95</td>
</tr>
<tr>
<td></td>
<td>4-36</td>
<td>Silty loam, silty clay loam</td>
<td>ML, CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>100   100   95-100 85-95</td>
</tr>
<tr>
<td></td>
<td>36-60</td>
<td>Silty loam, silty clay loam</td>
<td>ML, CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100 90-100 90-95 85-90</td>
</tr>
<tr>
<td>3840*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jung, moderately steep---</td>
<td>0-8</td>
<td>Very cobbly loam</td>
<td>GM-GC, SM-SC</td>
<td>A-4</td>
<td>35-50</td>
<td>65-80  50-65 45-60 35-50</td>
</tr>
<tr>
<td></td>
<td>8-19</td>
<td>Very cobbly clay loam, very cobbly clay, very gravelly clay loam</td>
<td>GC</td>
<td>A-7</td>
<td>15-40</td>
<td>55-65  50-60 40-50 35-45</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-14</td>
<td>Clay----------------</td>
<td>CH</td>
<td>A-7</td>
<td>0-5</td>
<td>85-100  80-95 75-90 70-85</td>
</tr>
<tr>
<td></td>
<td>14-24</td>
<td>Very cobbly silty clay, very gravelly clay, gravelly clay.</td>
<td>CH</td>
<td>A-7</td>
<td>15-50</td>
<td>70-85  55-75 50-70 50-65</td>
</tr>
<tr>
<td></td>
<td>24-26</td>
<td>Cemented----------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jung, strongly sloping---</td>
<td>0-8</td>
<td>Very cobbly fine sandy loam</td>
<td>SM-SC</td>
<td>A-2</td>
<td>35-50</td>
<td>65-80  50-65 40-60 20-35</td>
</tr>
<tr>
<td></td>
<td>8-19</td>
<td>Very cobbly clay loam, very cobbly clay, very gravelly clay loam</td>
<td>GC</td>
<td>A-7</td>
<td>15-40</td>
<td>55-65  50-60 40-50 35-45</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
## TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Frac.</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>3841*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jung----------------------</td>
<td>0-8</td>
<td>Very cobbly</td>
<td>GM-GC, SM-SC</td>
<td>A-4</td>
<td>35-50</td>
<td>65-80</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3842*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Hooplit---</td>
<td>0-4</td>
<td>Very gravelly</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>4-8</td>
<td>Very gravelly</td>
<td>GC</td>
<td>A-2, A-6</td>
<td>0-15</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3843*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jung----------------------</td>
<td>0-8</td>
<td>Very cobbly</td>
<td>GM-GC, SM-SC</td>
<td>A-4</td>
<td>35-50</td>
<td>65-80</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered</td>
<td>bedrock.</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at the end of the table.
### Soil Survey

#### TABLE 5.—ENGINEERING INDEX PROPERTIES—Continued

<table>
<thead>
<tr>
<th>Soil name and</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Frag-</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasti-</th>
</tr>
</thead>
<tbody>
<tr>
<td>map symbol</td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>fine sandy loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-14</td>
<td>Clay---------</td>
<td>CH</td>
<td>A-7</td>
<td>0-5</td>
<td>85-100</td>
<td>80-95</td>
</tr>
<tr>
<td></td>
<td>24-26</td>
<td>Cemented-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6-16</td>
<td>Gravelly clay</td>
<td>SC</td>
<td>A-2, A-6</td>
<td>0-10</td>
<td>65-90</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, gravelly loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16-20</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-19</td>
<td>Very cobbly clay</td>
<td>GC</td>
<td>A-7</td>
<td>15-40</td>
<td>55-65</td>
<td>50-60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam, very cobbly clay, very gravelly clay.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stingdorn-----</td>
<td>0-7</td>
<td>Extremely cobbly</td>
<td>GM, GM-GC</td>
<td>A-1, A-2</td>
<td>50-60</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7-15</td>
<td>Very cobbly clay</td>
<td>GC</td>
<td>A-6</td>
<td>30-50</td>
<td>60-75</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15-20</td>
<td>Indurated-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14-18</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3846*: Jung----</td>
<td>0-8</td>
<td>Very cobbly loam</td>
<td>GM-GC, SM-SC</td>
<td>A-4</td>
<td>35-50</td>
<td>65-80</td>
<td>50-65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, very cobbly clay, very gravelly clay loam.</td>
<td>GC</td>
<td>A-7</td>
<td>15-40</td>
<td>55-65</td>
<td>50-60</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number--</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHO &gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Unweathered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-19</td>
<td>CL, CH</td>
<td>A-7</td>
<td>30-40</td>
<td>75-90</td>
<td>65-75</td>
<td>50-70</td>
</tr>
<tr>
<td></td>
<td>19-22</td>
<td>Cemented-----</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Unweathered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jung---------------------</td>
<td>8-19</td>
<td>GC</td>
<td>A-7</td>
<td>15-40</td>
<td>55-65</td>
<td>50-60</td>
<td>40-50</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Unweathered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clanaipine--------------</td>
<td>0-10</td>
<td>GM-GC</td>
<td>A-2, A-4</td>
<td>15-25</td>
<td>60-70</td>
<td>50-60</td>
<td>35-45</td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>Weathered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at the end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO &gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jung----------------------</td>
<td>0-8</td>
<td>GM</td>
<td>Very gravelly</td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-19</td>
<td>GC</td>
<td>Very cobbly clay</td>
<td>very gravelly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td></td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>McVegas------------------</td>
<td>0-5</td>
<td>GM</td>
<td>Very gravelly</td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5-19</td>
<td>A-7</td>
<td>Very cobbly clay</td>
<td>very cobbly clay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19-22</td>
<td></td>
<td>Cemented--------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td></td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enko---------------------</td>
<td>0-6</td>
<td>SM-SC</td>
<td>Gravelly fine</td>
<td>sandy loam.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6-18</td>
<td>SM-SC, CL-ML</td>
<td>Loam, sandy loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18-60</td>
<td>SM-SC, CL-ML</td>
<td>Loam, fine sandy</td>
<td>loam, sandy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3851*:</td>
<td></td>
<td></td>
<td></td>
<td>A-2, A-4</td>
<td>0</td>
<td>60-80</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>11-28</td>
<td>GC</td>
<td>Very gravelly</td>
<td>loam, very</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28</td>
<td></td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decram, steep</td>
<td>0-11</td>
<td>GC</td>
<td>Very gravelly</td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11-28</td>
<td>GC</td>
<td>Very gravelly</td>
<td>loam, very</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28</td>
<td></td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hapgood-----------------</td>
<td>0-17</td>
<td>SM-SC</td>
<td>Gravelly loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17-40</td>
<td>GC, GM-GC</td>
<td>Very gravelly</td>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40-60</td>
<td>GC, GM-GC</td>
<td>Very cobbly clay</td>
<td>very gravelly</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>3852*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 Unweathered bedrock.</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Hapgood-----------------</td>
<td>0-17</td>
<td>Gravelly loam----</td>
<td>SM-SC</td>
<td>A-4</td>
<td>5-10</td>
<td>70-80</td>
<td>60-75</td>
</tr>
<tr>
<td>Chad---------------------</td>
<td>0-17</td>
<td>(Cobbly loam-----</td>
<td>SM-SC, CL-ML</td>
<td>A-4</td>
<td>15-25</td>
<td>70-80</td>
<td>65-75</td>
</tr>
<tr>
<td>42-50 Weathered Bedrock</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3861*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duco---------------------</td>
<td>0-6</td>
<td>(Very cobbly loam</td>
<td>SM-SC, GM-SC</td>
<td>A-2, A-4</td>
<td>35-55</td>
<td>55-80</td>
<td>50-75</td>
</tr>
<tr>
<td>15-19 Unweathered bedrock.</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Itca---------------------</td>
<td>0-9</td>
<td>(Very gravelly loam.</td>
<td>GC, GM-SC</td>
<td>A-2</td>
<td>5-10</td>
<td>50-60</td>
<td>35-50</td>
</tr>
<tr>
<td>17 Unweathered bedrock.</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Roca---------------------</td>
<td>0-4</td>
<td>(Very cobbly loam</td>
<td>CL</td>
<td>A-6</td>
<td>50-60</td>
<td>185-100</td>
<td>75-85</td>
</tr>
<tr>
<td>4-24 Very gravelly clay loam, very gravelly clay.</td>
<td></td>
<td>GC, SC</td>
<td>A-2</td>
<td>0-10</td>
<td>60-75</td>
<td>30-50</td>
<td>25-45</td>
</tr>
<tr>
<td>24 Unweathered bedrock.</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>&gt; 3 inches 4 10 40 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3863*:</td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duco</td>
<td>0-7</td>
<td>Stony loam---</td>
<td>SM-SC, GM-GC,</td>
<td>A-4 5-10 60-80 55-75 45-65 35-55</td>
<td>20-30</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CL-ML</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>stony</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>very</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>cobbly sandy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19-23</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, very</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>cobbly clay</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly clay</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>Weathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bedrock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jung</td>
<td>0-8</td>
<td>Very gravelly</td>
<td>GM</td>
<td>A-1, A-2 0-10 50-60 35-50 25-45 20-35 15-20</td>
<td>5-10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>very</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bedrock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3881*:</td>
<td>0-3</td>
<td>Extremely</td>
<td>GM-GC, A-4</td>
<td>A-4 50-65 60-75 55-65 45-60 35-50 25-30</td>
<td>5-10</td>
<td></td>
</tr>
<tr>
<td>Layview</td>
<td></td>
<td>cobbly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam, very</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly clay</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Unweathered</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bedrock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Packer</td>
<td>0-10</td>
<td>Gravelly loam</td>
<td>SM-SC, A-4</td>
<td>A-4 0-10 65-80 55-70 45-60 35-50 20-30</td>
<td>5-10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>cobbly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>cobbly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>cobbly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at the end of the table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>3881*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hapgood</td>
<td>0-17</td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-4</td>
<td>5-10</td>
<td>70-80</td>
<td>60-75</td>
</tr>
<tr>
<td>3891*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15-19</td>
<td>Unweathered bedrock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hapgood</td>
<td>0-17</td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-4</td>
<td>5-10</td>
<td>70-80</td>
<td>60-75</td>
</tr>
<tr>
<td>Rock outcrop</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3950*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hooptite</td>
<td>0-6</td>
<td>Very gravelly loam</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>4-8</td>
<td>Very gravelly loam, very gravelly clay loam</td>
<td>GC</td>
<td>A-2, A-6</td>
<td>0-15</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Unweathered bedrock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-19</td>
<td>Very cobby clay loam, very cobby clay, very gravelly clay loam</td>
<td>GC</td>
<td>A-7</td>
<td>15-40</td>
<td>55-65</td>
<td>50-60</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Unweathered bedrock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-10</td>
<td>Very gravelly loam, extremely gravelly loam</td>
<td>GM-GC, GM</td>
<td>A-2</td>
<td>0-25</td>
<td>120-55</td>
<td>15-50</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Unweathered bedrock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3 inches</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Hoople*-------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pct</td>
<td></td>
</tr>
<tr>
<td>fine sandy loam.</td>
<td></td>
<td></td>
<td>SM-SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-8</td>
<td>Very gravelly</td>
<td>GC</td>
<td>A-2, A-6</td>
<td>0-15</td>
<td>45-60</td>
<td>35-50</td>
<td>30-45</td>
</tr>
<tr>
<td>loam, very gravelly clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>loam, extremely stony sandy clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puett--------------------</td>
<td>0-3</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Coarse sandy</td>
<td>3-13</td>
<td>GM-GC</td>
<td>A-1, A-2,</td>
<td>0</td>
<td>80-100</td>
<td>75-95</td>
<td>40-80</td>
</tr>
<tr>
<td>loam, fine sandy loam.</td>
<td></td>
<td></td>
<td>SM, ML</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Weathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3952*-------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoople*-----------------</td>
<td>0-4</td>
<td>Very gravelly</td>
<td>GM-GC</td>
<td>A-2</td>
<td>0-10</td>
<td>45-60</td>
<td>35-50</td>
</tr>
<tr>
<td>fine sandy loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-8</td>
<td>Very gravelly</td>
<td>GC</td>
<td>A-2, A-6</td>
<td>0-15</td>
<td>45-60</td>
<td>35-50</td>
<td>30-45</td>
</tr>
<tr>
<td>loam, very gravelly clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stingdorn----------------</td>
<td>0-7</td>
<td>Gravelly loam</td>
<td>SM-SC</td>
<td>A-2, A-4</td>
<td>5-10</td>
<td>90-100</td>
<td>75-80</td>
</tr>
<tr>
<td>7-15</td>
<td>Very cobbly clay loam.</td>
<td>GC</td>
<td>A-6</td>
<td>30-50</td>
<td>60-75</td>
<td>55-65</td>
<td>45-60</td>
</tr>
<tr>
<td>15-20</td>
<td>Indurated--------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Unweathered bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3960---------------------</td>
<td>0-5</td>
<td>Gravelly loam</td>
<td>CL-NL,</td>
<td>A-4</td>
<td>0</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td>Pineval</td>
<td></td>
<td></td>
<td>GM-GC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>loam, very gravelly clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly sand.</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-25</td>
<td>30-60</td>
<td>20-50</td>
<td>15-40</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th></th>
<th>Classification</th>
<th>Fracture</th>
<th>Percentage passing</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unified</td>
<td>AASHTO</td>
<td>&gt; 3</td>
<td>sieve number</td>
<td>4</td>
</tr>
<tr>
<td>In</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3961*; Pineval------------</td>
<td>0-5</td>
<td>Very cobbly loam</td>
<td>SM-SC, GM-GC</td>
<td>A-4</td>
<td>30-40</td>
<td>65-80</td>
<td>55-70</td>
<td>45-60</td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly sand.</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0</td>
<td>30-60</td>
<td>20-50</td>
<td>15-40</td>
</tr>
<tr>
<td>Orovada-------------------</td>
<td>0-8</td>
<td>Cobble fine sandy loam.</td>
<td>SM</td>
<td>A-4</td>
<td>25-35</td>
<td>85-95</td>
<td>75-90</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td>8-26</td>
<td>Very sandy loam, clay loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>80-95</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>26-60</td>
<td>Stratified fine sandy loam to silty loam.</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>80-95</td>
<td>60-85</td>
</tr>
<tr>
<td>Beoska--------------------</td>
<td>0-13</td>
<td>Very fine sandy loam.</td>
<td>ML, SM</td>
<td>A-4</td>
<td>0</td>
<td>85-95</td>
<td>75-95</td>
<td>70-80</td>
</tr>
<tr>
<td></td>
<td>13-24</td>
<td>Very fine silty clay loam, clay loam.</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>80-100</td>
<td>75-100</td>
<td>70-85</td>
</tr>
<tr>
<td></td>
<td>24-55</td>
<td>Stratified gravelly very fine sandy loam to gravelly sandy loam.</td>
<td>GM, SM</td>
<td>A-1, A-2</td>
<td>0-10</td>
<td>55-80</td>
<td>50-75</td>
<td>30-50</td>
</tr>
<tr>
<td>3964*; Pineval------------</td>
<td>0-5</td>
<td>Gravelly fine sandy loam.</td>
<td>SM-SC</td>
<td>A-2</td>
<td>0</td>
<td>65-85</td>
<td>60-70</td>
<td>50-70</td>
</tr>
<tr>
<td></td>
<td>5-11</td>
<td>Very gravelly clay loam, very gravelly loam, sandy clay loam.</td>
<td>GC</td>
<td>A-2</td>
<td>0</td>
<td>35-60</td>
<td>25-50</td>
<td>20-40</td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>Stratified very gravelly sandy loam to extremely gravelly sand.</td>
<td>GP-GM, GM</td>
<td>A-1</td>
<td>0-25</td>
<td>30-60</td>
<td>20-50</td>
<td>15-40</td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fracture size (inches)</th>
<th>Percentage passing sieve number—</th>
<th>LIQUID limit</th>
<th>PLASTICITY index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unified AASHTO</td>
<td>4</td>
<td>10</td>
<td>40</td>
<td>200</td>
</tr>
<tr>
<td>3964*;</td>
<td>0-8</td>
<td>Fine sandy loam</td>
<td>SM, ML</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td>Orovada</td>
<td>8-20</td>
<td>Fine sandy loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td>20-65</td>
<td>Stratified fine</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy loam to</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>silt loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3990---------------------</td>
<td>0-16</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2</td>
<td>0</td>
<td>90-100</td>
<td>80-95</td>
</tr>
<tr>
<td>Setlemeyer</td>
<td>16-36</td>
<td>Silty clay loam</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3991*;</td>
<td>0-16</td>
<td>Loam-------------</td>
<td>CL-ML, CL</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Setlemeyer</td>
<td>16-36</td>
<td>Silty clay loam</td>
<td>ICL</td>
<td>A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stratified very</td>
<td>GC, CL, GM-CL</td>
<td>A-4, A-6</td>
<td>0-5</td>
<td>60-90</td>
<td>60-85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loamy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand to silty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pineval------------------</td>
<td>0-5</td>
<td>Gravelly loam---</td>
<td>CL-ML, GM</td>
<td>A-4</td>
<td>0</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam, very</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loam,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>very gravelly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sandy clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11-60</td>
<td>Stratified very</td>
<td>GP-CL, GM</td>
<td>A-1</td>
<td>0-25</td>
<td>30-60</td>
<td>20-50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly sandy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>loam to</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly sand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3992*;</td>
<td>0-16</td>
<td>Loam-------------</td>
<td>CL, CL-ML</td>
<td>A-4, A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Setlemeyer, drained</td>
<td>16-40</td>
<td>Silt loam, silty</td>
<td>ICL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fine sandy loam</td>
<td>CL-ML, SM-SC</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td>Setlemeyer, frequently flooded</td>
<td>0-15</td>
<td>Loam-------------</td>
<td>CL</td>
<td>A-6</td>
<td>0</td>
<td>90-100</td>
<td>90-100</td>
</tr>
<tr>
<td></td>
<td>15-35</td>
<td>Silty clay loam</td>
<td>ICL</td>
<td>A-6</td>
<td>0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>35-60</td>
<td>Stratified very</td>
<td>GC, CL, GM-CL</td>
<td>A-4, A-6</td>
<td>0-5</td>
<td>60-90</td>
<td>60-85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gravelly loamy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>sand to silty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clay loam.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number (%)</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>4041*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hymas</td>
<td>0-9</td>
<td>Gravelly loam</td>
<td>GC, SC</td>
<td>A-6</td>
<td>5-10</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>extremely gravelly loam</td>
<td></td>
<td>A-4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>extremely cobbly loam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15-19</td>
<td>Unweathered bedrock</td>
<td></td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xine</td>
<td>0-10</td>
<td>Gravelly loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0-5</td>
<td>65-80</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>Weathered bedrock</td>
<td></td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Unweathered bedrock</td>
<td></td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4070*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genaw</td>
<td>0-6</td>
<td>Gravelly loam</td>
<td>GM-GC, GC, SM-SC</td>
<td>A-4</td>
<td>0-5</td>
<td>65-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>6-11</td>
<td>Gravelly loam, gravelly clay loam</td>
<td>GC, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>60-80</td>
<td>55-75</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Weathered bedrock</td>
<td></td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wieland</td>
<td>0-8</td>
<td>Gravelly loam</td>
<td>GC, CL, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>60-85</td>
<td>50-75</td>
</tr>
<tr>
<td></td>
<td>8-20</td>
<td>Gravelly clay, clay</td>
<td>CH, SC</td>
<td>A-7</td>
<td>0-5</td>
<td>75-95</td>
<td>55-90</td>
</tr>
<tr>
<td>Grina</td>
<td>0-3</td>
<td>Very gravelly loam</td>
<td>GM-GC, GC</td>
<td>A-2</td>
<td>0-5</td>
<td>45-60</td>
<td>30-45</td>
</tr>
<tr>
<td></td>
<td>3-14</td>
<td>Loam, silt loam, silty clay loam</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>90-100</td>
<td>80-100</td>
</tr>
<tr>
<td></td>
<td>14-18</td>
<td>Weathered bedrock</td>
<td></td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See footnote at end of table.
<table>
<thead>
<tr>
<th>Soil name and map symbol</th>
<th>Depth</th>
<th>USDA texture</th>
<th>Classification</th>
<th>Fragments</th>
<th>Percentage passing sieve number</th>
<th>Liquid limit</th>
<th>Plasticity index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genaw</td>
<td>0-6</td>
<td>Very fine sandy loam</td>
<td>SM, SM-SC</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Genaw</td>
<td>6-11</td>
<td>Gravelly loam, gravelly clay loam</td>
<td>GC, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>60-80</td>
<td>55-75</td>
</tr>
<tr>
<td>Genaw</td>
<td>16</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Orovada</td>
<td>0-8</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>95-100</td>
<td>90-100</td>
</tr>
<tr>
<td>Orovada</td>
<td>8-20</td>
<td>Fine sandy loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td>Orovada</td>
<td>20-60</td>
<td>Stratified fine sandy loam to silt loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0</td>
<td>75-100</td>
<td>75-95</td>
</tr>
<tr>
<td>Puett</td>
<td>0-4</td>
<td>Fine sandy loam</td>
<td>SM</td>
<td>A-4</td>
<td>0</td>
<td>90-100</td>
<td>85-95</td>
</tr>
<tr>
<td>Puett</td>
<td>4-15</td>
<td>Coarse sandy</td>
<td>SM, ML</td>
<td>A-1, A-2, A-4</td>
<td>0</td>
<td>80-100</td>
<td>75-95</td>
</tr>
<tr>
<td>Puett</td>
<td>15-19</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>4073*</td>
<td>0-6</td>
<td>Gravelly loam</td>
<td>GM-GC, SM-SC</td>
<td>A-4</td>
<td>0-5</td>
<td>65-80</td>
<td>55-75</td>
</tr>
<tr>
<td>4073*</td>
<td>6-11</td>
<td>Gravelly loam, gravelly clay loam</td>
<td>GC, SC</td>
<td>A-6</td>
<td>0-5</td>
<td>60-80</td>
<td>55-75</td>
</tr>
<tr>
<td>4073*</td>
<td>16</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Broyles</td>
<td>0-13</td>
<td>Gravelly very fine sandy loam</td>
<td>SM, GM</td>
<td>A-4</td>
<td>0</td>
<td>65-85</td>
<td>60-75</td>
</tr>
<tr>
<td>Broyles</td>
<td>13-60</td>
<td>Stratified loam to gravelly loamy sand</td>
<td>SM</td>
<td>A-2, A-4</td>
<td>0</td>
<td>70-100</td>
<td>60-95</td>
</tr>
<tr>
<td>Perlor</td>
<td>7-14</td>
<td>Loam, sandy loam</td>
<td>SM, ML</td>
<td>A-4</td>
<td>0-5</td>
<td>75-100</td>
<td>70-95</td>
</tr>
<tr>
<td>Perlor</td>
<td>14</td>
<td>Weathered bedrock</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>4140*</td>
<td>0-4</td>
<td>Loam</td>
<td>CL-ML</td>
<td>A-4</td>
<td>0</td>
<td>95-100</td>
<td>95-100</td>
</tr>
<tr>
<td>4140*</td>
<td>4-60</td>
<td>Stratified sandy loam to silty clay loam</td>
<td>CL</td>
<td>A-6, A-7</td>
<td>0</td>
<td>80-100</td>
<td>75-100</td>
</tr>
</tbody>
</table>

* See description of the map unit for composition and behavior characteristics of the map unit.
<table>
<thead>
<tr>
<th>Soil name</th>
<th>Family or higher taxonomic class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akerue</td>
<td>Clayey-skeletal, montmorillonitic, frigid, shallow Xerolic Durargids</td>
</tr>
<tr>
<td>Allor</td>
<td>Fine-loamy, mixed, mesic Duricollomorphic Haplorgids</td>
</tr>
<tr>
<td>Atlow</td>
<td>Loamy-skeletal, mixed, mesic Lithic Xeric Haplargids</td>
</tr>
<tr>
<td>Attella</td>
<td>Loamy-skeletal, mixed (calcareous), frigid Lithic Xeric Torriorthents</td>
</tr>
<tr>
<td>Barrier</td>
<td>Loamy, mixed, frigid, shallow Haplargic Durorthods</td>
</tr>
<tr>
<td>Bata</td>
<td>Fine-silty, mixed (calcareous), mesic Durorhodic Torriorthents</td>
</tr>
<tr>
<td>Belate</td>
<td>Loamy-skeletal, mixed, frigid Aridic Argixerolls</td>
</tr>
<tr>
<td>Belted</td>
<td>Loamy, mixed, mesic, shallow Halic Durargids</td>
</tr>
<tr>
<td>Beoska</td>
<td>Fine-loamy, mixed, mesic Duric Natargids</td>
</tr>
<tr>
<td>Blackhawk</td>
<td>Loamy, mixed, mesic, shallow Entic Durorthods</td>
</tr>
<tr>
<td>Broyles</td>
<td>Coarse-loamy, mixed, mesic Duric Camborthods</td>
</tr>
<tr>
<td>Bubus</td>
<td>Coarse-loamy, mixed (calcareous), mesic Durorhodic Torriorthents</td>
</tr>
<tr>
<td>Bucan</td>
<td>Fine, montmorillonitic, frigid Xerolic Haplargids</td>
</tr>
<tr>
<td>Buffaran</td>
<td>Clazy, montmorillonitic, mesic, shallow Xerolic Durargids</td>
</tr>
<tr>
<td>Burrita</td>
<td>Clazy-skeletal, montmorillonitic, mesic Lithic Xerolic Haplargids</td>
</tr>
<tr>
<td>Canwe</td>
<td>Fine-silty, mixed, mesic Aridic Duric Haplargers</td>
</tr>
<tr>
<td>Caphor</td>
<td>Coarse-loamy, mixed (calcareous), mesic Durorhodic Torriorthents</td>
</tr>
<tr>
<td>Chad</td>
<td>Fine, mixed, frigid Aridic Argixerolls</td>
</tr>
<tr>
<td>Chedehap</td>
<td>Coarse-loamy, mixed, mesic Xerolic Camborthods</td>
</tr>
<tr>
<td>Chiara</td>
<td>Loamy, mixed, mesic, shallow Xerolic Durargids</td>
</tr>
<tr>
<td>Clalpine</td>
<td>Loamy-skeletal, mixed, frigid Typic Argixerolls</td>
</tr>
<tr>
<td>Cleavage</td>
<td>Loamy-skeletal, mixed, frigid Lithic Argixerolls</td>
</tr>
<tr>
<td>Colbar</td>
<td>Fine-loamy, mixed, mesic Xerolic Haplargids</td>
</tr>
<tr>
<td>Costur</td>
<td>Loamy, mixed, frigid Lithic Xeric Haplargids</td>
</tr>
<tr>
<td>Creemon</td>
<td>Coarse-silty, mixed, mesic Duric Camborthods</td>
</tr>
<tr>
<td>Cren</td>
<td>Coarse-silty, mixed (calcareous), mesic Durorhodic Torriorthents</td>
</tr>
<tr>
<td>Davey</td>
<td>Sandy, mixed, mesic Xerolic Camborthods</td>
</tr>
<tr>
<td>Decram</td>
<td>Loamy-skeletal, mixed Typic Cryoborolls</td>
</tr>
<tr>
<td>Defler</td>
<td>Loamy-skeletal, mixed (calcareous), mesic Typic Torriorthents</td>
</tr>
<tr>
<td>Desatoya</td>
<td>Clayey over loamy-skeletal, montmorillonitic, mesic Duricollomorphic Haplargids</td>
</tr>
<tr>
<td>Dewar</td>
<td>Fine-loamy, mixed, mesic Xerolic Haplargids</td>
</tr>
<tr>
<td>Duco</td>
<td>Loamy-skeletal, mixed, mesic Lithic Argixerolls</td>
</tr>
<tr>
<td>Eastwell</td>
<td>Loamy-skeletal, mixed, mesic, shallow Haplargic Durorthods</td>
</tr>
<tr>
<td>Enko</td>
<td>Coarse-loamy, mixed, mesic Duricollomorphic Camborthods</td>
</tr>
<tr>
<td>Fenarios</td>
<td>Fine-silty, mixed (calcareous), frigid Typic Torriorthents</td>
</tr>
<tr>
<td>Filiran</td>
<td>Fine, montmorillonitic, mesic Haplargic Nadurargids</td>
</tr>
<tr>
<td>Fortkan</td>
<td>Fine, montmorillonitic, frigid Xerolic Haplargids</td>
</tr>
<tr>
<td>Gando</td>
<td>Loamy-skeletal, mixed, frigid Lithic Haplargers</td>
</tr>
<tr>
<td>Genaw</td>
<td>Loamy, mixed, mesic, shallow Xerolic Haplargids</td>
</tr>
<tr>
<td>Glean</td>
<td>Loamy-skeletal, mixed, frigid Pacic Haplargers</td>
</tr>
<tr>
<td>Glyphs</td>
<td>Fine-loamy, mixed, mesic Duricollomorphic Haplargids</td>
</tr>
<tr>
<td>Grunyan</td>
<td>Loamy-skeletal, carbonatic, frigid Typic Calcixerolls</td>
</tr>
<tr>
<td>Grassval</td>
<td>Loamy, mixed, mesic, shallow Xerolic Durargids</td>
</tr>
<tr>
<td>Grina</td>
<td>Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents</td>
</tr>
<tr>
<td>Gund</td>
<td>Fine-silty over clayey, mixed, nonacid, mesic Aquic Durorhodic Torriorthents</td>
</tr>
<tr>
<td>Hardwood</td>
<td>Fine-loamy, mixed Pacic Cryoborolls</td>
</tr>
<tr>
<td>Halacan</td>
<td>Coarse-loamy, carbonatic Cryic Lithic Rendolls</td>
</tr>
<tr>
<td>Handy</td>
<td>Fine, montmorillonitic, frigid Xerolic Haplargids</td>
</tr>
<tr>
<td>Hapgood</td>
<td>Loamy-skeletal, mixed Pacic Cryoborolls</td>
</tr>
<tr>
<td>Hatun</td>
<td>Loamy-skeletal, carbonatic Cryic Rendolls</td>
</tr>
<tr>
<td>Hesling</td>
<td>Coarse-loamy, mixed, mesic Typic Camborthods</td>
</tr>
<tr>
<td>Howellite</td>
<td>Loamy-skeletal, mixed, mesic Lithic Xerolic Haplargids</td>
</tr>
<tr>
<td>Hopeka</td>
<td>Loamy-skeletal, carbonatic, frigid Lithic Xeric Torriorthents</td>
</tr>
<tr>
<td>Hymas</td>
<td>Loamy-skeletal, carbonatic, frigid Lithic Haplargers</td>
</tr>
<tr>
<td>Isoleide</td>
<td>Mixed, mesic Typic Torriorthents</td>
</tr>
<tr>
<td>Itca</td>
<td>Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls</td>
</tr>
<tr>
<td>Itca Variant</td>
<td>Loamy, mixed, frigid, shallow Aridic Argixerolls</td>
</tr>
<tr>
<td>Izoo</td>
<td>Sandy-skeletal, mixed, mesic Typic Torriorthents</td>
</tr>
<tr>
<td>Soil name</td>
<td>Family or higher taxonomic class</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Irod</td>
<td>Loamy-skeletal, carbonatic, mesic Lithic Xeric Torriorthents</td>
</tr>
<tr>
<td>Jesse Camp</td>
<td>Fine-silty, mixed, frigid Xerollic Camborthods</td>
</tr>
<tr>
<td>Jung</td>
<td>Clayey-skeletal, montmorillonitic, mesic Lithic Xerollic Haplargids</td>
</tr>
<tr>
<td>Kawich</td>
<td>Mixed, mesic Typic Torripsamments</td>
</tr>
<tr>
<td>Kelk</td>
<td>Fine-silty, mixed, mesic Durixerollic Camborthords</td>
</tr>
<tr>
<td>Kingshman</td>
<td>Fine, montmorillonitic, mesic Typic Haplargids</td>
</tr>
<tr>
<td>Kobeh</td>
<td>Loamy-skeletal, mixed, frigid Durixerollic Camborthords</td>
</tr>
<tr>
<td>Koyen</td>
<td>Coarse-loamy, mixed, mesic Typic Camborthords</td>
</tr>
<tr>
<td>Koynick</td>
<td>Loamy-skeletal, carbonatic, mesic Lithic Torriorthents</td>
</tr>
<tr>
<td>Kram</td>
<td>Loamy-skeletal, carbonatic, mesic Lithic Xeric Torriorthents</td>
</tr>
<tr>
<td>Labshaft</td>
<td>Loamy-skeletal, mixed Lithic Cryoborolls</td>
</tr>
<tr>
<td>Laped</td>
<td>Loamy, mixed, mesic, shallow Typic Durargids</td>
</tr>
<tr>
<td>Laxal</td>
<td>Loamy-skeletal, mixed (calcareous), mesic Durorthid Torriorthents</td>
</tr>
<tr>
<td>Layvview</td>
<td>Loamy-skeletal, mixed Argic Lithic Cryoborolls</td>
</tr>
<tr>
<td>Locane</td>
<td>Clayey-skeletal, montmorillonitic, frigid Lithic Xerollic Haplargids</td>
</tr>
<tr>
<td>Lono</td>
<td>Loamy-skeletal, mixed, frigid Acidic Haploxerol</td>
</tr>
<tr>
<td>Loqewash</td>
<td>Loamy-skeletal, mixed, frigid Typic Camborthords</td>
</tr>
<tr>
<td>McConnell</td>
<td>Sandy-skeletal, mixed, mesic Xerollic Camborthords</td>
</tr>
<tr>
<td>Mcvegas</td>
<td>Clayey-skeletal, montmorillonitic, mesic, shallow Haplic Nadargards</td>
</tr>
<tr>
<td>Mihat</td>
<td>Loamy-skeletal, mixed, mesic Xerollic Camborthords</td>
</tr>
<tr>
<td>Misad</td>
<td>Loamy-skeletal, mixed (calcareous), mesic Durorthid Torriorthents</td>
</tr>
<tr>
<td>Munique</td>
<td>Loamy, mixed, mesic, shallow Haploxerollic Durargards</td>
</tr>
<tr>
<td>Needle Peak</td>
<td>Fine-silty, mixed (calcareous), mesic Aquic Torriorthents</td>
</tr>
<tr>
<td>Newlands</td>
<td>Fine-loamy, mixed Argic Cryoborolls</td>
</tr>
<tr>
<td>Newpass</td>
<td>Fine, montmorillonitic, mesic Haploxerollic Nadargards</td>
</tr>
<tr>
<td>Ninemile</td>
<td>Clayey, montmorillonitic, frigid Lithic Argixerolls</td>
</tr>
<tr>
<td>Nobuck</td>
<td>Loamy-skeletal, mixed, frigid Xerollic Haplargids</td>
</tr>
<tr>
<td>Novacan</td>
<td>Fine, montmorillonitic, mesic Haploxerollic Durargards</td>
</tr>
<tr>
<td>Osol</td>
<td>Loamy-skeletal, mixed, mesic, shallow Typic Durargards</td>
</tr>
<tr>
<td>Osoill</td>
<td>Loamy-skeletal, mixed Argic Cryoborolls</td>
</tr>
<tr>
<td>Ockorel</td>
<td>Fine, montmorillonitic, mesic Duric Natargards</td>
</tr>
<tr>
<td>Packer</td>
<td>Loamy-skeletal, mixed Argic Cryoborolls</td>
</tr>
<tr>
<td>Parnat</td>
<td>Fine-silty, mixed (calcareous), mesic Pluvaquentic Haplaquolls</td>
</tr>
<tr>
<td>Perlor</td>
<td>Loamy, mixed (calcareous), mesic, shallow Typic Torriorthents</td>
</tr>
<tr>
<td>Pineval</td>
<td>Loamy-skeletal, mixed, mesic Durixerollic Haplargards</td>
</tr>
<tr>
<td>Poorcoal</td>
<td>Coarse-loamy, mixed, frigid Durixerollic Calcorthids</td>
</tr>
<tr>
<td>Puett</td>
<td>Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents</td>
</tr>
<tr>
<td>Pula</td>
<td>Clayey-skeletal, montmorillonitic, mesic Xerollic Haplargids</td>
</tr>
<tr>
<td>Punchbowl</td>
<td>Loamy, mixed, frigid Lithic Xerollic Haplargards</td>
</tr>
<tr>
<td>Rasile</td>
<td>Coarse-silty, mixed, mesic Durixerollic Camborthords</td>
</tr>
<tr>
<td>Ravenswood</td>
<td>Clayey-skeletal, montmorillonitic, frigid Typic Argixerolls</td>
</tr>
<tr>
<td>Relley</td>
<td>Fine-silty, mixed, mesic Duric Camborthords</td>
</tr>
<tr>
<td>Relucan</td>
<td>Fine-loamy, mixed, frigid Aridic Argixerolls</td>
</tr>
<tr>
<td>Ricert</td>
<td>Fine-loamy, mixed, mesic Duric Natargards</td>
</tr>
<tr>
<td>Robson</td>
<td>Clayey-skeletal, montmorillonitic, frigid Lithic Xerollic Haplargids</td>
</tr>
<tr>
<td>Roca</td>
<td>Clayey-skeletal, montmorillonitic, frigid Xerollic Haplargads</td>
</tr>
<tr>
<td>Rotom</td>
<td>Fine-silty, mixed (calcareous), mesic Durorthid Torriorthents</td>
</tr>
<tr>
<td>Rutah</td>
<td>Loamy-skeletal, mixed, frigid Xerollic Camborthords</td>
</tr>
<tr>
<td>Settlemeye</td>
<td>Fine-loamy, mixed, mesic Pluvaquentic Haplaquolls</td>
</tr>
<tr>
<td>Shagnasty</td>
<td>Fine, montmorillonitic, frigid Typic Argixerolls</td>
</tr>
<tr>
<td>Shipley</td>
<td>Coarse-loamy, mixed (calcareous), frigid Xerollic Torriorthents</td>
</tr>
<tr>
<td>Silverado</td>
<td>Coarse-loamy, mixed, frigid Durixerollic Camborthords</td>
</tr>
<tr>
<td>Simpark</td>
<td>Loamy-skeletal, mixed, frigid, shallow Xerollic Durargards</td>
</tr>
<tr>
<td>Skulwak</td>
<td>Fine, montmorillonitic (calcareous), mesic Aeric Halaquets</td>
</tr>
<tr>
<td>Sodhouse</td>
<td>Loamy, mixed, mesic, shallow Typic Durorthid</td>
</tr>
<tr>
<td>Softscrape</td>
<td>Loamy-skeletal, mixed, frigid Pachic Argixerolls</td>
</tr>
<tr>
<td>Sonoma</td>
<td>Fine-silty, mixed (calcareous), mesic Aeric Pluvquets</td>
</tr>
<tr>
<td>Spasprey</td>
<td>Loamy-skeletal, mixed, mesic Haploxerollic Durargards</td>
</tr>
<tr>
<td>Spike</td>
<td>Loamy-skeletal, mixed, mesic Typic Haplargids</td>
</tr>
<tr>
<td>Stampede</td>
<td>Fine, montmorillonitic, frigid Aridic Durixerolls</td>
</tr>
<tr>
<td>Stingdorn</td>
<td>Loamy-skeletal, mixed, mesic, shallow Typic Durargards</td>
</tr>
<tr>
<td>Soil name</td>
<td>Family or higher taxonomic class</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Sumine---------------------</td>
<td>Loamy-skeletal, mixed, frigid Aridic Argixerolls</td>
</tr>
<tr>
<td>Sundown--------------------</td>
<td>Mixed, mesic Typic Torripsamment</td>
</tr>
<tr>
<td>Teguro---------------------</td>
<td>Loamy, mixed, frigid Lithic Argixerolls</td>
</tr>
<tr>
<td>Tenabo---------------------</td>
<td>Loamy, mixed, mesic, shallow Typic Nadurargids</td>
</tr>
<tr>
<td>Tessfive-------------------</td>
<td>Loamy, mixed (calcareous), mesic Lithic Xeric Torriorthents</td>
</tr>
<tr>
<td>Tomel----------------------</td>
<td>Loamy-skeletal, mixed, mesic, shallow Typic Durargids</td>
</tr>
<tr>
<td>Torripsammentic Haploxerolls</td>
<td>Torripsammentic Haploxerolls</td>
</tr>
<tr>
<td>Torro----------------------</td>
<td>Loamy-skeletal, mixed, frigid Aridic Argixerolls</td>
</tr>
<tr>
<td>Trunk----------------------</td>
<td>Fine, montmorillonitic, mesic Xerolic Haplargids</td>
</tr>
<tr>
<td>Tulase----------------------</td>
<td>Coarse-silty, mixed (calcareous), mesic Durorthidic Xeric Torriorthents</td>
</tr>
<tr>
<td>Typic Argixerolls---------</td>
<td>Typic Argixerolls</td>
</tr>
<tr>
<td>Umbrellid-----------------</td>
<td>Fine, montmorillonitic (calcareous), mesic Aeric Halaquepts</td>
</tr>
<tr>
<td>Unius---------------------</td>
<td>Loamy, mixed, mesic, shallow Haploxerolic Durorthids</td>
</tr>
<tr>
<td>Unsel---------------------</td>
<td>Fine-loamy, mixed, mesic Duric Haplargids</td>
</tr>
<tr>
<td>Unsel Variant-------------</td>
<td>Fine-loamy, mixed, mesic Duric Haplargids</td>
</tr>
<tr>
<td>Valmy---------------------</td>
<td>Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents</td>
</tr>
<tr>
<td>Walti---------------------</td>
<td>Fine, montmorillonitic, frigid Aridic Argixerolls</td>
</tr>
<tr>
<td>Wardenot-----------------</td>
<td>Sandy-skeletal, mixed, mesic Typic Torriorthents</td>
</tr>
<tr>
<td>Welch----------------------</td>
<td>Fine-loamy, mixed, frigid Cumulic Haplaquolls</td>
</tr>
<tr>
<td>Wendane-------------------</td>
<td>Fine-silty, mixed (calcareous), mesic Aeric Halaquepts</td>
</tr>
<tr>
<td>Whirllo--------------------</td>
<td>Loamy-skeletal, mixed, mesic Typic Camborthids</td>
</tr>
<tr>
<td>Wholan---------------------</td>
<td>Coarse-silty, mixed, mesic Typic Camborthids</td>
</tr>
<tr>
<td>Wieland-------------------</td>
<td>Fine, montmorillonitic, mesic Durixerolic Haplargids</td>
</tr>
<tr>
<td>Xine-----------------------</td>
<td>Loamy-skeletal, mixed, frigid Aridic Calcixerolls</td>
</tr>
<tr>
<td>Zaidy---------------------</td>
<td>Fine-silty, mixed (calcareous), mesic Aeric Halaquepts</td>
</tr>
<tr>
<td>Zineb----------------------</td>
<td>Loamy-skeletal, mixed, mesic Haploxerolic Durargids</td>
</tr>
<tr>
<td>Zosta---------------------</td>
<td>Fine, montmorillonitic, frigid Xerolic Paleargids</td>
</tr>
<tr>
<td>Zosta Variant-------------</td>
<td>Fine, montmorillonitic, mesic Xerolic Paleargids</td>
</tr>
</tbody>
</table>
Rangeland Plants and Woodland Understory
### 120—Akerue-Simpark-Robson association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Akerue</td>
<td>Simpark</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15 5-15 5-10</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Needleleandthread</td>
<td>STCO4</td>
<td>5-15 5-15 5-15</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5 2-5 5-10</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3 1-3 2-5</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Thubber needlegrass</td>
<td>STTH2</td>
<td>5-15 5-15 5-10</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>5-10 5-10 5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirelltail</td>
<td>SIHY</td>
<td>2-5 2-5 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>10-15 10-15 10-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-10 5-10 5-10</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-15 5-15 5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5 2-5 5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bus sagebrush</td>
<td>ARSP5</td>
<td>2-5 2-5 5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>5-15 5-15 25-30</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>10-15 10-15 10-15</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Rabbitbrush</td>
<td>CHRS9</td>
<td>1-10 1-10 1-10</td>
<td>1-10</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>5-10 5-10 5-10</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20 10-20 10-15</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O28BO16N</th>
<th>O28BO16N</th>
<th>O28BO45N</th>
<th>O28BO38N</th>
<th>O28BO07N</th>
<th>None</th>
<th>None</th>
</tr>
</thead>
</table>

### Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>Favorable years</th>
<th>Normal years</th>
<th>Unfavorable years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>500</td>
<td>250</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>250</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>800</td>
<td>600</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>800</td>
<td>600</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>1,000</td>
<td>750</td>
<td>600</td>
</tr>
</tbody>
</table>

---
### 121--Akerue-Simpark-Punchbowl association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Akerue</td>
<td>Simpark</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARARB</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>AFTFM*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
<td>10-20</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>028B016N</th>
<th>028B016N</th>
<th>028B016N</th>
<th>028B045N</th>
<th>028B010N</th>
<th>None</th>
</tr>
</thead>
</table>

### Potential production (lb/acre):

- **Favorable years**: 500, 500, 500, 800, 800, ---
- **Normal years**: 250, 250, 250, 600, 600, ---
- **Unfavorable years**: 150, 150, 150, 400, 400, ---
### 141--Unsel-Wardenot-Belted association

[Abundance of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Unsel</td>
<td>Wardenot</td>
</tr>
<tr>
<td>Galleta</td>
<td>HIJA</td>
<td>10-25</td>
<td>10-25</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PGG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPF</td>
<td>4-10</td>
<td>4-10</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>10-25</td>
<td>10-25</td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVB</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL3A5</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>029X017N</th>
<th>029X017N</th>
<th>029X017N</th>
<th>028B016N</th>
<th>028B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>150</td>
<td>400</td>
</tr>
</tbody>
</table>
142—Unsel-Caphor-Chedehap association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gallieta</td>
<td>HIJA</td>
<td>10-25</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td>2-5</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STC04</td>
<td>---</td>
</tr>
<tr>
<td>Thumber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Scarlet globemallow</td>
<td>SPCO</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPF0</td>
<td>4-10</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>10-25</td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVEB</td>
<td>5-15</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>5-10</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>AKTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol:

<table>
<thead>
<tr>
<th></th>
<th>029X017N</th>
<th>028B017N</th>
<th>028B052N</th>
<th>024X003N</th>
<th>024X002N</th>
<th>028B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>700</td>
<td>600</td>
<td>600</td>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>500</td>
<td>400</td>
<td>450</td>
<td>450</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>100</td>
<td>250</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>
150--Chedehap-Enko-Ricert association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chedehap</td>
<td>Enko</td>
<td>Ricert</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>15-25</td>
<td>20-30</td>
<td>5-15</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIGY</td>
<td>2-5</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>10-20</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Scarlet globemallow</td>
<td>SPCO</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>2-5</td>
<td>5-10</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
<td>30-40</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARABN</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSBS</td>
<td>5-10</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>028B052N</th>
<th>028B01ON</th>
<th>028B017N</th>
<th>028B052N</th>
<th>028B01ON</th>
<th>028B016N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>600</td>
<td>800</td>
<td>700</td>
<td>600</td>
<td>800</td>
<td>500</td>
</tr>
<tr>
<td>Normal years</td>
<td>400</td>
<td>600</td>
<td>500</td>
<td>400</td>
<td>600</td>
<td>250</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>400</td>
<td>250</td>
<td>300</td>
<td>400</td>
<td>150</td>
</tr>
</tbody>
</table>
160—Batan association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant name</th>
<th>Soil composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Batan</td>
<td>Batan, slightly saline</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>1-3</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPAG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-50</td>
<td>30-40</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>15-30</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-15</td>
<td>20-30</td>
</tr>
<tr>
<td>Sheepweed</td>
<td>SUED</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GSAP</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULP</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol: 024X003N 024X002N 024X004N 028B010N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024X003N</th>
<th>024X002N</th>
<th>024X004N</th>
<th>028B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>600</td>
<td>700</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>350</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>200</td>
<td>400</td>
</tr>
</tbody>
</table>
161--Batan silt loam
[The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>Betan</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>10-30</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>T-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>40-60</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>5-10</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td>T-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPPF</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-50</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>5-15</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-15</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>50-65</td>
</tr>
<tr>
<td>Sickle saltbrush</td>
<td>ATFA</td>
<td>1-2</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>1-2</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>1-2</td>
</tr>
</tbody>
</table>

Range site symbol: 024X003N  024X003N  024X012N  024X007N
Potential production (lb/acre):   
Favorable years: 600  600  700  1,900  
Normal years: 450  450  400  1,400  
Unfavorable years: 300  300  200  800
162--Batan-Kelk association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td>Batan</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>S1HY</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STC04</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FP GG</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>F PFF</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SU AED</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ART K*</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ART RN*</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL A5</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
</tr>
</tbody>
</table>

Range site symbol: 024X003N 024X022N 024X006N 024X011N 02BB017N

Potential production (lb/acre):
- Favorable years: 600 800 1,500 500 700
- Normal years: 450 600 1,100 350 500
- Unfavorable years: 300 350 600 200 250
### 168--Batan-Babus-Ocala association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Batan</td>
<td>Bubus</td>
<td>Ocala</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>40-60</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleleaf thread</td>
<td>STCO4</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>T-10</td>
<td>T-10</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>2-8</td>
<td>2-8</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-50</td>
<td>30-50</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>15-30</td>
<td>15-30</td>
<td>5-15</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-15</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAE9</td>
<td>2-15</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CUNA2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAA5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X003N</th>
<th>024X003N</th>
<th>024X007N</th>
<th>024X006N</th>
<th>024X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>600</td>
<td>600</td>
<td>1,900</td>
<td>1,500</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>1,400</td>
<td>1,100</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>800</td>
<td>600</td>
<td>300</td>
</tr>
</tbody>
</table>
## 169--Batan-Ocala association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Batan</td>
<td>Ocala, occasionally flooded</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STHI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>T-10</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALS</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPPF</td>
<td>2-8</td>
<td>T-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-50</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>15-30</td>
<td>60-75</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTR*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNIA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRB*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>O24X003N</th>
<th>O24X011N</th>
<th>O24X011N</th>
<th>O24X006N</th>
<th>None</th>
<th>O24X005N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>600</td>
<td>500</td>
<td>500</td>
<td>1,500</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>350</td>
<td>350</td>
<td>1,100</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>200</td>
<td>200</td>
<td>600</td>
<td>---</td>
</tr>
</tbody>
</table>
170--Beoska-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td></td>
</tr>
<tr>
<td>Thurbere needlegrass</td>
<td>STTH2</td>
<td></td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td></td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td></td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td></td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td></td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
</tr>
<tr>
<td>Spiny hop sage</td>
<td>GRSP</td>
<td></td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRM*</td>
<td></td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
</tr>
</thead>
<tbody>
<tr>
<td>O24X002N</td>
</tr>
<tr>
<td>Favorable years:</td>
</tr>
<tr>
<td>Normal years:</td>
</tr>
<tr>
<td>Unfavorable years:</td>
</tr>
<tr>
<td>700</td>
</tr>
<tr>
<td>800</td>
</tr>
<tr>
<td>450</td>
</tr>
</tbody>
</table>
171--Beoska silt loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Beoska</td>
<td>1</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFPF</td>
<td>2-8</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTNW*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X020N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
172--Boska-Tenabo complex

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Beosa</td>
<td>Tenabo</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>PQSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Thuber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUA5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol: 024X002N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X020N</th>
<th>024X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
173—Beoska-Allor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td></td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td></td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPOG</td>
<td></td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPCA</td>
<td></td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td></td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
</tr>
<tr>
<td>Spiny hop sage</td>
<td>GRSP</td>
<td></td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td></td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O24X002N</th>
<th>O27X008N</th>
<th>O24X020N</th>
<th>O24X020N</th>
<th>O24X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>500</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
174--Beoska-Chiara association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleleandthread</td>
<td>STC04</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPG5</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHEE</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hop sage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRA*</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X002N</th>
<th>024X005N</th>
<th>024X020N</th>
<th>028B003N</th>
<th>024X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td>024X002N</td>
<td>024X005N</td>
<td>024X020N</td>
<td>028B003N</td>
<td>024X002N</td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>800</td>
<td>700</td>
<td>2,600</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>600</td>
<td>450</td>
<td>1,250</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>400</td>
<td>300</td>
<td>800</td>
<td>300</td>
</tr>
</tbody>
</table>
### 175--Beoska-Whirlo-Misad association

[Presence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Beoska</td>
<td>Whirlo</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTWR*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X002N</th>
<th>O24X002N</th>
<th>O24X002N</th>
<th>O24X020N</th>
<th>O24X002N</th>
</tr>
</thead>
</table>
| Potential production (lb/acre):
Favorable years               | 700      | 700      | 700      | 700      | 700      |
Normal years                  | 450      | 450      | 450      | 450      | 450      |
Unfavorable years             | 300      | 300      | 300      | 300      | 300      |
177--Beoska-Dewar-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Beoska</td>
<td>Dewar</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td></td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td></td>
<td>20-50</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td></td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td></td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td></td>
<td>2-8</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
<td>30-40</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHV1P</td>
<td></td>
<td>2-5</td>
<td>5-15</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>2-5</td>
<td>2-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X002N</th>
<th>O24X005N</th>
<th>O28B010N</th>
<th>O24X005N</th>
<th>O24X045N</th>
<th>O24X002N</th>
</tr>
</thead>
</table>

Potential production (lb/acre):

- Favorable years: 700 800 800 800 350 700
- Normal years: 450 600 600 600 200 450
- Unfavorable years: 300 400 400 400 100 300
180--Needle Peak-Batan-Yobe association

[The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Needle Peak</td>
<td>Batan</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>50-60</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>T-10</td>
</tr>
<tr>
<td>Thelypod</td>
<td>THELY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTET*</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>2-10</td>
<td>15-30</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>30-50</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>---</td>
<td>2-15</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTERW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GESP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUA5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 024X006N 024X003N 024X007N 024X022N 028B017N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024X006N</th>
<th>024X003N</th>
<th>024X007N</th>
<th>024X022N</th>
<th>028B017N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>1,500</td>
<td>600</td>
<td>1,900</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,100</td>
<td>450</td>
<td>1,400</td>
<td>600</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>600</td>
<td>300</td>
<td>800</td>
<td>350</td>
<td>250</td>
</tr>
</tbody>
</table>
190--Wardenot-Sundown association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Wardenot</td>
<td>Sundown</td>
<td>1</td>
</tr>
<tr>
<td>Galleta</td>
<td>HIJA</td>
<td>10-25</td>
<td>---</td>
<td>10-25</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-10</td>
<td>20-30</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirletail</td>
<td>SIHY</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Sand dropseed</td>
<td>SPCR</td>
<td>---</td>
<td>3-10</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>4-10</td>
<td>5-10</td>
<td>4-10</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>10-25</td>
<td>---</td>
<td>10-25</td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVEB</td>
<td>5-15</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUA5</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>15-25</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>1-5</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>10-20</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol         | O29X017N | O29X012N | O29X017N | O28B011N |
|---------------------------|----------|----------|----------|----------|
Potential production (lb/acre):
Favorable years            | 350      | 500      | 350      | 950      |
Normal years                | 250      | 350      | 250      | 700      |
Unfavorable years           | 100      | 200      | 100      | 400      |
191--Wardenot-Laxal association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Wardenot</td>
<td>Laxal</td>
</tr>
<tr>
<td>Galleta</td>
<td>NIJA</td>
<td>10-25</td>
<td>10-25</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squarreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSF3</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>4-10</td>
<td>4-10</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>10-25</td>
<td>10-25</td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVEB</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS5</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Iodinebush</td>
<td>ALOC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 029X017N 029X017N 024X003N 029X017N 028B020N

Potential production (lb/acre):
- Favorable years: 350 350 600 350 600
- Normal years: 250 250 450 250 450
- Unfavorable years: 100 100 300 100 200
### 200--Izo-Misad association

[The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Izo</td>
<td>Misad</td>
</tr>
<tr>
<td>Galleta</td>
<td>HIJA</td>
<td>10-25</td>
<td>---</td>
<td>10-25</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-10</td>
<td>5-15</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>STHY</td>
<td>2-5</td>
<td>5-15</td>
<td>2-5</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSF3</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>FOBE</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Needlelandthread</td>
<td>STCO4</td>
<td>---</td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>4-10</td>
<td>2-8</td>
<td>4-10</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>10-25</td>
<td>30-40</td>
<td>10-25</td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVEE</td>
<td>5-15</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
<td>20-30</td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>5-10</td>
<td>2-5</td>
<td>5-10</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GHSP</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUADE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>029X017N</th>
<th>024X002N</th>
<th>029X017N</th>
<th>024X003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>700</td>
<td>350</td>
<td>600</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>450</td>
<td>250</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>100</td>
<td>300</td>
<td>100</td>
<td>300</td>
</tr>
</tbody>
</table>
## 201-ISO-BUBUS association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Izo</td>
<td>1</td>
</tr>
<tr>
<td>Galleta</td>
<td>HLJA</td>
<td>10-25</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>T-10</td>
<td>T-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>4-10</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>10-25</td>
<td>30-50</td>
<td>30-50</td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVEB</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUIL5</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVEA</td>
<td>---</td>
<td>15-30</td>
<td>15-30</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>---</td>
<td>2-15</td>
<td>2-15</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>029X017N</th>
<th>024X003N</th>
<th>024X003N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>600</td>
<td>600</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>450</td>
<td>450</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>100</td>
<td>300</td>
<td>300</td>
<td>---</td>
</tr>
</tbody>
</table>
210--Laxal association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Galleta</td>
<td>HIJA</td>
<td>10-25</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>GRHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squireltaill</td>
<td>SIHY</td>
<td>2-5</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td>2-5</td>
</tr>
<tr>
<td>Needlegrass</td>
<td>STIPA</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>4-10</td>
</tr>
<tr>
<td>Annual forbs</td>
<td>AAFF</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>10-25</td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVEB</td>
<td>5-15</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>5-10</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTKT*</td>
<td>---</td>
</tr>
<tr>
<td>Greene rabbitbrush</td>
<td>CHGR6</td>
<td>---</td>
</tr>
<tr>
<td>Fouring saltbrush</td>
<td>ATCA2</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 029X017N 029X017N 029X008N 028B009N 024X003N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>029X017N</th>
<th>029X017N</th>
<th>029X008N</th>
<th>028B009N</th>
<th>024X003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>350</td>
<td>700</td>
<td>700</td>
<td>600</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>250</td>
<td>400</td>
<td>400</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>100</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
211--Laxal gravelly fine sandy loam, occasionally flooded, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Galleta</td>
<td>HIJA</td>
<td>Laxal</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>1</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSF3</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
</tr>
<tr>
<td>Needlegrass</td>
<td>STIPA</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGO</td>
<td>Perennial forbs</td>
</tr>
<tr>
<td></td>
<td>PFFF</td>
<td>Annual forbs</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>10-25</td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVEB</td>
<td>5-15</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTMT*</td>
<td>---</td>
</tr>
<tr>
<td>Greene rabbitbrush</td>
<td>CHGR6</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O29X017N</th>
<th>O28B009N</th>
<th>O29X008N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>400</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>100</td>
<td>300</td>
</tr>
</tbody>
</table>
### 212--Laxal-Tomel association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Galleta</td>
<td>HIJA</td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td></td>
</tr>
<tr>
<td>Needlegrass</td>
<td>STIPA</td>
<td></td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPG6</td>
<td></td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPF0</td>
<td></td>
</tr>
<tr>
<td>Annual forbs</td>
<td>AAF0</td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVEB</td>
<td></td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL05</td>
<td></td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td></td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUA0E</td>
<td></td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td></td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ART0K*</td>
<td></td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>029X017N</th>
<th>029X017N</th>
<th>029X017N</th>
<th>024X003N</th>
<th>029X008N</th>
<th>029X009N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years:</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>600</td>
<td>700</td>
</tr>
<tr>
<td>Normal years:</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>450</td>
<td>400</td>
</tr>
<tr>
<td>Unfavorable years:</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>300</td>
<td>200</td>
</tr>
</tbody>
</table>
220—Blackhawk very fine sandy loam, 2 to 8 percent slopes

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>Blackhawk</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>2-5</td>
<td>2-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>2-5</td>
<td>2-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>1-3</td>
<td>10-20</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPOG</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-50</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>5-15</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>5-15</td>
</tr>
<tr>
<td>Wintertan</td>
<td>EU UA5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTK1*</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Greene rabbitbrush</td>
<td>CHGR6</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTKW*</td>
<td>30-35</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>15-30</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAEI</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>024X002N</th>
<th>028B009N</th>
<th>024X020N</th>
<th>024X003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td>024X002N</td>
<td>028B009N</td>
<td>024X020N</td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>400</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
221--Blackhawk-Tenabo-Desatoya Variant association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Desatoya Variant</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Blackhawk</td>
<td>Tenabo</td>
<td>1</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>5-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
<td>10-15</td>
<td>15-30</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurbet needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>10-15</td>
<td>10-15</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
<td>5-20</td>
<td>5-20</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>---</td>
<td>5-20</td>
<td>5-20</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPRAE</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFPF</td>
<td>2-8</td>
<td>2-8</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
<td>30-40</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>15-30</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARWN</td>
<td>---</td>
<td>---</td>
<td>25-35</td>
<td>25-35</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRWN*</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
<td>5-35</td>
<td>5-35</td>
</tr>
</tbody>
</table>

Range site symbol                 | O24X002N | O24X002N | O24X030N | O24X030N | O24X045N | O27X008N |

Potential production (lb/acre):

- Favorable years: 700, 700, 500, 500, 350, 700
- Normal years: 450, 450, 350, 350, 30, 500
- Unfavorable years: 300, 300, 250, 250, 100, 300
231--Broyles very fine sandy loam, 2 to 4 percent slopes

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORNY</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleleandthread</td>
<td>STCO4</td>
<td>1-3</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol: 024X002N  024X002N  024X002N  024X002N

Potential production (lb/acre):
- Favorable years: 700  700  700  700
- Normal years: 450  450  450  450
- Unfavorable years: 300  300  300  300
### 235--Broyles-Creemon association

[The letter "™" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Broyles</td>
<td>Creemon</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleleafthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPPP</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hop sage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

**Range site symbol**

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X003N</th>
<th>024X002N</th>
<th>024X020N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>600</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
236--Broyles association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Broyles, moderately saline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>---</td>
<td>1-3</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>5-20</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>T-10</td>
<td>---</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>---</td>
<td>---</td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Phlox</td>
<td>PMLOX</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>2-8</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-50</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>5-15</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>5-15</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVEA</td>
<td>15-30</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>2-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>5-10</td>
<td>30-35</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>024X002N</th>
<th>024X003N</th>
<th>024X022N</th>
<th>024X002N</th>
<th>024X020N</th>
</tr>
</thead>
</table>

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024X002N</th>
<th>024X003N</th>
<th>024X022N</th>
<th>024X002N</th>
<th>024X020N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>600</td>
<td>800</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>600</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>350</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
### 237--Broyles-Beoska-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Broyles</td>
<td>Beoska</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTKW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

#### Range site symbol

<table>
<thead>
<tr>
<th>024X002N</th>
<th>024X002N</th>
<th>028B01ON</th>
<th>024X02ON</th>
<th>024X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (1lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>600</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>400</td>
<td>300</td>
</tr>
</tbody>
</table>
### 239-Broyles-Tessfive-Perlor association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Broyles</td>
<td>Tessfive</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>10-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>---</td>
<td>1-3</td>
</tr>
<tr>
<td>Thuber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPFG</td>
<td>---</td>
<td>5-20</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>2-8</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>---</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUH5</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARABN</td>
<td>---</td>
<td>25-35</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAEED</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTK2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Purple sage</td>
<td>SADOC2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARPRN*</td>
<td>---</td>
<td>---</td>
<td>10-25</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>5-35</td>
<td>2-5</td>
</tr>
</tbody>
</table>

**Range site symbol**

<table>
<thead>
<tr>
<th></th>
<th>024X002N</th>
<th>024X03ON</th>
<th>024X002N</th>
<th>024X003N</th>
<th>025X025N</th>
<th>024X020N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>500</td>
<td>700</td>
<td>600</td>
<td>200</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>350</td>
<td>450</td>
<td>450</td>
<td>150</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>250</td>
<td>300</td>
<td>300</td>
<td>100</td>
<td>300</td>
</tr>
</tbody>
</table>
249—Bubus association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SINY</td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPPG</td>
<td>T-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPPF</td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS5</td>
<td>2-5</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>15-30</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUARC</td>
<td>2-15</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X002N</th>
<th>O24X003N</th>
<th>O24X002N</th>
<th>O24X003N</th>
<th>None</th>
</tr>
</thead>
</table>

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>O24X002N</th>
<th>O24X003N</th>
<th>O24X002N</th>
<th>O24X003N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>600</td>
<td>700</td>
<td>600</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>---</td>
</tr>
</tbody>
</table>
260—Umbeland-Wendane association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th></th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Umbeland</td>
<td>Wendane</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>40-70</td>
<td>15-30</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>T-15</td>
<td>5-10</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>T-55</td>
<td>40-60</td>
<td>5-15</td>
<td>15-25</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>2-8</td>
<td>---</td>
<td>---</td>
<td>T-5</td>
</tr>
<tr>
<td>Iodinebush</td>
<td>ALOC2</td>
<td>10-20</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Saltbush</td>
<td>ATRIP</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>2-5</td>
<td>5-15</td>
<td>60-75</td>
<td>5-15</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
<td>1-2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>1-2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Silver buffaloberry</td>
<td>SHAR</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>024X010N</th>
<th>024X007N</th>
<th>024X011N</th>
<th>028B057N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>450</td>
<td>1,900</td>
<td>500</td>
<td>1,500</td>
</tr>
<tr>
<td>Normal years</td>
<td>300</td>
<td>1,400</td>
<td>350</td>
<td>1,000</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>800</td>
<td>200</td>
<td>600</td>
</tr>
</tbody>
</table>
261—Umberland-Wendane-Ocala association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPA1</td>
<td>40-70</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>T-15</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>T-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
</tr>
<tr>
<td>Iodinebush</td>
<td>ALOC2</td>
<td>10-20</td>
</tr>
<tr>
<td>Saltbush</td>
<td>ATRIP</td>
<td>5-10</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>2-5</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAI9</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
<tr>
<td>Silver buffaloberry</td>
<td>SNAR</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X010N</th>
<th>024X007N</th>
<th>024X011N</th>
<th>028B057N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>450</td>
<td>1,900</td>
<td>500</td>
<td>1,500</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>300</td>
<td>1,400</td>
<td>350</td>
<td>1,000</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>800</td>
<td>200</td>
<td>600</td>
<td>---</td>
</tr>
</tbody>
</table>
262--Umbrelland silt loam, frequently flooded, 0 to 2 percent slopes

[ Absence of an entry indicates that the named plant is not a key species in the potential native plant community ]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Umbrelland</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>30-40</td>
</tr>
<tr>
<td>Alkali muhly</td>
<td>MUAS</td>
<td>5-15</td>
</tr>
<tr>
<td>Alkali cordgrass</td>
<td>SFGP</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>5-10</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>10-15</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>10-15</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PGGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>5-15</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>1-2</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>1-2</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>1-2</td>
</tr>
<tr>
<td>Silver buffaloberry</td>
<td>SHAR</td>
<td>10-20</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
</tr>
<tr>
<td>3,000</td>
</tr>
<tr>
<td>Normal years</td>
</tr>
<tr>
<td>1,500</td>
</tr>
<tr>
<td>Unfavorable years</td>
</tr>
<tr>
<td>700</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Soil name</th>
<th>Inclusion number--</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Umbrelland</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

02BB002N | 024X007N | 024X006N | 028B057N |
### 270--Tomel-Laxal association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tomel</td>
<td>Laxal</td>
<td>1</td>
</tr>
<tr>
<td>Galleta</td>
<td>HIJA</td>
<td>10-25</td>
<td>10-25</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-10</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Needlegrass</td>
<td>STIPA</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPPF</td>
<td>4-10</td>
<td>4-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Annual forbs</td>
<td>AAFP</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>10-25</td>
<td>10-25</td>
<td>---</td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVEB</td>
<td>5-15</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS5</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARPSTF*</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
<td>10-25</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O29X017N</th>
<th>O29X017N</th>
<th>O29X009N</th>
<th>O29X008N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>350</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>250</td>
<td>500</td>
<td>400</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>100</td>
<td>100</td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>
### 280--Chiara-Filiran association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chiara</td>
<td>Filiran</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Thurbur needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5A</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

**Range site symbol**: 028B010N  028B010N  028B010N  024X002N  024X045N

**Potential production (lb/acre):**

- **Favorable years**: 800  800  800  700  350
- **Normal years**: 600  600  600  450  200
- **Unfavorable years**: 400  400  400  300  100
284--Chiara-Dewar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chiara</td>
<td>Dewar</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pouring saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol          028B010N   028B010N   028B010N   028B017N   028B010N
Potential production (lb/acre):
Favorable years             800       800       800       700      800
Normal years                600       600       600       500      600
Unfavorable years           400       400       400       250      400
290--Creemon silt loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Creemon</td>
<td>1</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopseage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X004N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>500</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>350</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>200</td>
</tr>
</tbody>
</table>
291--Creemon-Wholan association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Creemon</td>
<td>Wholan</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>2-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>10-20</td>
<td>10-30</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>---</td>
<td>T-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPFG</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>2-8</td>
<td>2-8</td>
<td>T-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>60-70</td>
<td>---</td>
</tr>
<tr>
<td>Sickle saltbush</td>
<td>ATFA</td>
<td>---</td>
<td>---</td>
<td>50-65</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUEAD</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS*</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>O24X002N</th>
<th>O24X004N</th>
<th>O24X012N</th>
<th>O28B017N</th>
<th>O24X003N</th>
<th>O28B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>500</td>
<td>700</td>
<td>700</td>
<td>600</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>350</td>
<td>400</td>
<td>500</td>
<td>450</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>200</td>
<td>200</td>
<td>250</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>
**295—Cremon-Cren association**

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleleafthread</td>
<td>STC4</td>
<td>1-3</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
<tr>
<td>Seepeweed</td>
<td>SUAE</td>
<td>---</td>
</tr>
<tr>
<td>Anderson peachbrush</td>
<td>PRAN2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
</tr>
</tbody>
</table>

**Range site symbol**

<table>
<thead>
<tr>
<th></th>
<th>O24X002N</th>
<th>O24X002N</th>
<th>O24X006N</th>
<th>O24X003N</th>
<th>O24X041N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>1,500</td>
<td>600</td>
<td>1,000</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>1,100</td>
<td>450</td>
<td>800</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>600</td>
<td>300</td>
<td>600</td>
</tr>
</tbody>
</table>
296--Creemon-Hessing association

[ Absence of an entry indicates that the named plant is not a key species in the potential native plant community ]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Creemon</td>
<td>Hessing</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>GRHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHA</td>
<td>1-2</td>
<td>1-2</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>1-2</td>
<td>1-2</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULF5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X020N</th>
<th>024X014N</th>
<th>024X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>400</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>300</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>200</td>
<td>300</td>
</tr>
</tbody>
</table>
297--Creemon-Rasille-Tulase association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Creemon</th>
<th>Rasille</th>
<th>Tulase</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td>1-3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>20-50</td>
<td>20-50</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>T-10</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>2-4</td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>2-4</td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHE2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>2-8</td>
<td>---</td>
<td>---</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>---</td>
<td>---</td>
<td>30-50</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>15-30</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>15-20</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Sheepweed</td>
<td>SUADE</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-15</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>15-25</td>
</tr>
<tr>
<td>Anderson peachbrush</td>
<td>PRAN2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>2-10</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-10</td>
<td>2-10</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O24X002N</th>
<th>O24X005N</th>
<th>O24X005N</th>
<th>O24X003N</th>
<th>O24X041N</th>
<th>O24X020N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>800</td>
<td>800</td>
<td>600</td>
<td>1,000</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>600</td>
<td>600</td>
<td>450</td>
<td>800</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>400</td>
<td>400</td>
<td>300</td>
<td>600</td>
</tr>
</tbody>
</table>
298--Creemon-Misad association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Creemon</th>
<th>Misad</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>5-10</td>
<td>2-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>-</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>-</td>
<td>2-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
<td>1-3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>T-10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1-2</td>
<td>1-2</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPAE</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1-2</td>
<td>1-2</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1-2</td>
<td>1-2</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>2-8</td>
<td>2-8</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
<td>30-40</td>
<td>30-50</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
<td>5-15</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>-</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUA5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>15-30</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAES</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2-15</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>APTWH*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>30-35</td>
<td>30-35</td>
<td>30-35</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>O24X002N</th>
<th>O24X002N</th>
<th>O24X002N</th>
<th>O24X003N</th>
<th>O24X020N</th>
<th>O24X020N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>600</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
### 301--Cren-Ocala-Playas association

[The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Cren</th>
<th>Ocala</th>
<th>Playas</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCl2</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
<td>40-60</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DSIPs2</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>---</td>
<td>15-30</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>T-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>T-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>T-5</td>
<td>---</td>
<td>---</td>
<td>2-8</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-50</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>30-50</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>15-30</td>
<td>60-75</td>
<td>---</td>
<td>5-15</td>
<td>15-30</td>
<td>10-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>2-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAI9</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X003N</th>
<th>O24X011N</th>
<th>None</th>
<th>024X007N</th>
<th>024X003N</th>
<th>027X016N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>600</td>
<td>500</td>
<td>---</td>
<td>1,900</td>
<td>600</td>
<td>300</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>350</td>
<td>---</td>
<td>1,400</td>
<td>450</td>
<td>200</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>200</td>
<td>---</td>
<td>800</td>
<td>300</td>
<td>50</td>
</tr>
</tbody>
</table>
### 310--Yobe-Kawich-Playas association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Yobe</td>
<td>Kawich</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>S1HY</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Alkalai sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>T-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>60-75</td>
<td>10-40</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
<td>30-50</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>---</td>
<td>---</td>
<td>2-15</td>
</tr>
<tr>
<td>Alkalai rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>5-20</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>024X011N</th>
<th>027X016N</th>
<th>None</th>
<th>024X003N</th>
<th>024X007N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>300</td>
<td>---</td>
<td>600</td>
<td>1,900</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>200</td>
<td>---</td>
<td>450</td>
<td>1,400</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>200</td>
<td>50</td>
<td>---</td>
<td>300</td>
<td>800</td>
</tr>
</tbody>
</table>
### 320--Newpass-Jung association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFPG</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTBW*</td>
<td>10-20</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>10-20</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>5-10</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>027X008N</th>
<th>027X032N</th>
<th>024X025N</th>
<th>None</th>
<th>027X008N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>600</td>
<td>250</td>
<td>---</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>500</td>
<td>400</td>
<td>150</td>
<td>---</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>200</td>
<td>75</td>
<td>---</td>
<td>300</td>
</tr>
</tbody>
</table>
### 321--Newpass-Old Camp association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community.]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Newpass</td>
<td>Old Camp, strongly sloping</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-15</td>
<td>20-30</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Thruber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-10</td>
<td>5-15</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTFW*</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>10-20</td>
<td>5-15</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTF2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Current</td>
<td>RIBBS</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUCS</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

#### Range site symbol
- 027X008N
- 027X007N
- 027X007N
- 024X006N
- 025X062N

#### Woodland site symbol
- 027X007N
- 025X062N

#### Potential production (lb/acre):
- **Favorable years**: 700, 600, 600, 1,500, 500
- **Normal years**: 500, 450, 450, 1,100, 350
- **Unfavorable years**: 300, 300, 300, 600, 200
### 360—Eastwell-Blackhawk-Pineval association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eastwell</td>
<td>Blackhawk</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>10-40</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td>2-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>STHY</td>
<td>---</td>
<td>5-15</td>
<td>5-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORFY</td>
<td>---</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Fine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PGGG</td>
<td>5-10</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
<td>2-8</td>
<td>5-10</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>5-10</td>
<td>30-40</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARS5P</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>2-5</td>
<td>10-20</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUA5</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>APMRN*</td>
<td>---</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
<td>2-5</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>027X032N</th>
<th>024X002N</th>
<th>027X008N</th>
<th>027X008N</th>
<th>027X008N</th>
</tr>
</thead>
</table>

### Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>Favorable years</th>
<th>Normal years</th>
<th>Unfavorable years</th>
</tr>
</thead>
<tbody>
<tr>
<td>027X032N</td>
<td>600</td>
<td>400</td>
<td>200</td>
</tr>
<tr>
<td>024X002N</td>
<td>700</td>
<td>450</td>
<td>300</td>
</tr>
<tr>
<td>027X008N</td>
<td>700</td>
<td>500</td>
<td>300</td>
</tr>
<tr>
<td>027X008N</td>
<td>700</td>
<td>500</td>
<td>300</td>
</tr>
</tbody>
</table>
**404—Glean-Gando association**

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Glean</td>
<td>Gando</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>30-60 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10 10-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thumber needlegrass</td>
<td>STTH2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>30-50</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tufted hairgrass</td>
<td>DECA5</td>
<td>30-60</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Alpine timothy</td>
<td>PHL2</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Meadow barley</td>
<td>HORR2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-15</td>
<td>2-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-10</td>
<td>2-5</td>
<td>10-15</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CBAC2</td>
<td>1-3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>1-2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRWO</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cinquefoil</td>
<td>POTEN</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>5-10</td>
<td>10-20</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARABB</td>
<td>10-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>10-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
<td>2-5</td>
<td>5-10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X023N</th>
<th>028B034N</th>
<th>None</th>
<th>028B024N</th>
<th>025X005N</th>
<th>028B038N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>1,500</td>
<td>600</td>
<td>---</td>
<td>2,800</td>
<td>2,000</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,200</td>
<td>400</td>
<td>---</td>
<td>1,700</td>
<td>1,700</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>900</td>
<td>250</td>
<td>---</td>
<td>1,000</td>
<td>1,000</td>
<td>400</td>
</tr>
</tbody>
</table>
441--Gund-Umberland association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Gnd</td>
<td>Umberland</td>
<td>1</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>50-60</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>T-10</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPF1</td>
<td>2-8</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>15-20</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>2-10</td>
<td>15-30</td>
<td>40-60</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>30-50</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Seegwee</td>
<td>SUAED</td>
<td>---</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>024X006N</th>
<th>024X003N</th>
<th>024X008N</th>
<th>024X007N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>1,500</td>
<td>600</td>
<td>800</td>
<td>1,900</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,100</td>
<td>450</td>
<td>600</td>
<td>1,400</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>600</td>
<td>300</td>
<td>400</td>
<td>800</td>
<td>---</td>
</tr>
</tbody>
</table>
442—Gund—Babus—Wendane association

[The letter "*" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Gund</th>
<th>Bubus</th>
<th>Wendane</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>15-20</td>
<td>---</td>
<td>40-60</td>
<td>50-60</td>
<td>15-20</td>
<td>5-15</td>
</tr>
<tr>
<td>Bottlebrush squirreletal</td>
<td>SIHY</td>
<td>2-10</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>2-10</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>2-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SFAI</td>
<td>---</td>
<td>---</td>
<td>15-30</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPPG</td>
<td>---</td>
<td>T-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>2-8</td>
<td>---</td>
<td>2-8</td>
<td>2-8</td>
<td>T-5</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>40-60</td>
<td>15-30</td>
<td>5-15</td>
<td>2-10</td>
<td>40-60</td>
<td>60-75</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>30-50</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SDAED</td>
<td>---</td>
<td>2-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
<td>1-2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>1-2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
<td>15-20</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol          | O24X008N  | O24X003N  | O24X007N  | O24X006N  | O24X008N  | O24X011N  |
Potential production (lb/acre):  
Favorable years: 800 600 1,900 1,500 800 500
Normal years: 600 450 1,400 1,100 600 350
Unfavorable years: 400 300 800 600 400 200
### Gund-Batan association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gund</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>15-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-10</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>2-10</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
</tr>
<tr>
<td>Nuttall alkaligrass</td>
<td>PUAI</td>
<td>---</td>
</tr>
<tr>
<td>Baltic rush</td>
<td>JUHA</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Cinquefoil</td>
<td>POTEN</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>40-60</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>---</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X008N</th>
<th>024X003N</th>
<th>024X011N</th>
<th>024X007N</th>
<th>024X044N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>600</td>
<td>500</td>
<td>1,900</td>
<td>350</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>450</td>
<td>350</td>
<td>1,400</td>
<td>225</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>300</td>
<td>200</td>
<td>800</td>
<td>150</td>
</tr>
</tbody>
</table>
### 444—Gund association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Gund</th>
<th>Gund, drained</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>50-60</td>
<td>15-20</td>
<td>5-20</td>
<td>---</td>
<td>40-60</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>2-10</td>
<td>2-5</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>---</td>
<td>---</td>
<td>2-4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>2-8</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTXT*</td>
<td>15-20</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>2-10</td>
<td>40-60</td>
<td>20-30</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>2-5</td>
<td>40-60</td>
<td>---</td>
<td>2-5</td>
<td>1-2</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTWN*</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Potential site symbol</th>
<th>024X006N</th>
<th>024X008N</th>
<th>024X022N</th>
<th>028B010N</th>
<th>024X007N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>1,500</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>1,900</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,100</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>1,400</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>600</td>
<td>400</td>
<td>350</td>
<td>400</td>
<td>800</td>
</tr>
</tbody>
</table>
461--Hapgood-Packer-Layview association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Hapgood</th>
<th>Packer</th>
<th>Layview</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>10-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>ATRG</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>5-15</td>
<td>10-20</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEK12</td>
<td>2-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bulbous oniongrass</td>
<td>MEBU</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSG</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>STLE4</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Columbia needlegrass</td>
<td>STNE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Blue wildrye</td>
<td>ELGL</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPAG</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Geranium</td>
<td>GERAN</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Groundsel</td>
<td>SENE</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUP1N</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Tailcup lupine</td>
<td>LUCA</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Horsemint</td>
<td>AGUR</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-10</td>
<td>1-5</td>
<td>1-5</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>2-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARARB</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CIV18</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Woods rose</td>
<td>ROWO</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Quaking aspen</td>
<td>POTR5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol
Woodland site symbol

Potential production (lb/acre):

<table>
<thead>
<tr>
<th>Condition</th>
<th>Favorable years</th>
<th>Normal years</th>
<th>Unfavorable years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2,200</td>
<td>1,700</td>
<td>1,200</td>
</tr>
<tr>
<td></td>
<td>350</td>
<td>250</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>350</td>
<td>250</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>1,000</td>
<td>800</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>800</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>800</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>600</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>400</td>
</tr>
</tbody>
</table>
### 463--Hapgood-Packer-Rubble land association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hapgood</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>10-15</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>20-30</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>5-15</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEK12</td>
<td>2-15</td>
</tr>
<tr>
<td>Bulbous oniongrass</td>
<td>MERU</td>
<td>2-5</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>2-5</td>
</tr>
<tr>
<td>Webber ricegrasses</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>STLE4</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Geranium</td>
<td>GERAN</td>
<td>2-5</td>
</tr>
<tr>
<td>Groundsel</td>
<td>SENEC</td>
<td>2-5</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>2-5</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSAM</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>---</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARV2</td>
<td>5-10</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMMP</td>
<td>2-10</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHV18</td>
<td>---</td>
</tr>
<tr>
<td>Oceanspray</td>
<td>HOLOD</td>
<td>---</td>
</tr>
<tr>
<td>Three tip sagebrush</td>
<td>AFTR4</td>
<td>---</td>
</tr>
<tr>
<td>Current</td>
<td>RIBES</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X032N</th>
<th>024X016N</th>
<th>None</th>
<th>024X016N</th>
<th>024X027N</th>
<th>024X034N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>2,200</td>
<td>350</td>
<td>---</td>
<td>350</td>
<td>1,200</td>
<td>1,600</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,700</td>
<td>250</td>
<td>---</td>
<td>250</td>
<td>800</td>
<td>1,300</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>1,200</td>
<td>150</td>
<td>---</td>
<td>150</td>
<td>600</td>
<td>800</td>
</tr>
</tbody>
</table>
465—Hapgood-Halacan-Hatur association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Hapgood</th>
<th>Halacan</th>
<th>Hatur</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>10-15</td>
<td>---</td>
<td>15-20</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>5-15</td>
<td>10-20</td>
<td>10-15</td>
<td>30-60</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEKI2</td>
<td>2-15</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bulbous onlonggrass</td>
<td>NEBU</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>2-5</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>STLE4</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCT2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>15-20</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Geranium</td>
<td>GERAN</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Groundsel</td>
<td>SENE</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Lupine</td>
<td>LJFFIN</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-10</td>
<td>1-5</td>
<td>10-20</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>2-10</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>5-15</td>
<td>10-20</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>10-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O24X032N</th>
<th>O24X016N</th>
<th>O28B029N</th>
<th>O24X042N</th>
<th>None</th>
<th>O25X003N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>2,200</td>
<td>350</td>
<td>1,500</td>
<td>1,000</td>
<td>---</td>
<td>2,500</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,700</td>
<td>250</td>
<td>900</td>
<td>800</td>
<td>---</td>
<td>1,900</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>1,200</td>
<td>150</td>
<td>650</td>
<td>500</td>
<td>---</td>
<td>1,200</td>
</tr>
</tbody>
</table>
### 491--Enko-Orovada association, gently sloping

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>Potential production (lb/acre):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Favorable years</td>
</tr>
<tr>
<td>O2BB01ON</td>
<td>800</td>
</tr>
<tr>
<td>O2BB01ON</td>
<td>800</td>
</tr>
<tr>
<td>O2BB01ON</td>
<td>800</td>
</tr>
<tr>
<td>O2BB01ON</td>
<td>800</td>
</tr>
</tbody>
</table>
### 492--Enko-Glyphs association

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Enko</td>
<td>Glyphs</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td></td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>FFFF</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTKN*</td>
<td></td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O2BB01ON</th>
<th>O2BB01ON</th>
<th>O2BB01ON</th>
<th>O2BB01ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>
493--Enko-Orovada association, nearly level

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Enko</td>
<td>Orovada</td>
<td>1</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCT2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>FGNE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Greene rabbithrush</td>
<td>CGBK6</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B009N</th>
<th>O28B003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>400</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>300</td>
</tr>
</tbody>
</table>
512--Hessing-Relley association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPA1</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSF5</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSF</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUFA5</td>
<td>2-5</td>
</tr>
<tr>
<td>Sickle saltbush</td>
<td>ATFR</td>
<td>50-65</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTFT*</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA3</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSAA</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>02X002N</th>
<th>02X012N</th>
<th>02X002N</th>
<th>02X002N</th>
<th>02X006N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>1,500</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>400</td>
<td>450</td>
<td>450</td>
<td>1,100</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>200</td>
<td>300</td>
<td>300</td>
<td>600</td>
</tr>
</tbody>
</table>
560--Jesse Camp silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jesse Camp</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>30-50</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>2-5</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>2-5</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>15-25</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td></td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td></td>
</tr>
<tr>
<td>Greene rabbitbrush</td>
<td>CHGR6</td>
<td></td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>028B003N</th>
<th>028B010N</th>
<th>028B017N</th>
<th>028B009N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>2,600</td>
<td>800</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,250</td>
<td>600</td>
<td>500</td>
<td>400</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>800</td>
<td>400</td>
<td>250</td>
<td>300</td>
</tr>
</tbody>
</table>
### 621-Loncan-Gando-Glean association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Loncan</td>
<td>Gando</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Tharber needlegrass</td>
<td>STTH2</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCT2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Weber ricegrass</td>
<td>STWE</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>PCGU3</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>1-5</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BREC5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Tufted hairgrass</td>
<td>DEC5</td>
<td>30-60</td>
<td>---</td>
</tr>
<tr>
<td>Alpine timothy</td>
<td>PHAL2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Meadow barley</td>
<td>HOB2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRWO</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Cinquefoil</td>
<td>POTEN</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPF</td>
<td>5-12</td>
<td>5-12</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>15-25</td>
<td>1-5</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PITU2</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>2-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTR*</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Common chokecherry</td>
<td>PRVI</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSBS</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

**Range site symbol**: O2BB030N O24X016N O28B030N None O25X003N O2BB026N O25X005N

**Potential production (lb/acre):**

- Favorable years: 1,100 350 1,100 --- 2,500 1,400 2,000
- Normal years: 850 250 850 --- 1,900 1,000 1,700
- Unfavorable years: 550 150 550 --- 1,200 700 1,000
632--McConnel-Orovada-Misad association

[The letter "$T$" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>McConnel</td>
<td>Orovada</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>20-50</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>20-30</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Needleandthreed</td>
<td>STC04</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PF GG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALS4</td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>30-40</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATOC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUA5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Seseweed</td>
<td>SUAED</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSNN</td>
<td>2-10</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol: 024X005N 028B010N 024X002N 024X022N 024X003N 024X004N

Potential production (lb/acre):
- Favorable years: 800 800 700 800 600 500
- Normal years: 600 600 450 600 450 350
- Unfavorable years: 400 400 300 350 300 200
633—McConnel-Rasille-Wholan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>McConnel</td>
<td>Rasille</td>
</tr>
<tr>
<td>Thurbear needlegrass</td>
<td>STTH2</td>
<td>20-50</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSAM</td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-4</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>60-70</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTP2*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>2-10</td>
<td>5-15</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>024X005N</th>
<th>028B010N</th>
<th>024X004N</th>
<th>028B010N</th>
<th>028B013N</th>
<th>024X006N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>500</td>
<td>800</td>
<td>800</td>
<td>1,500</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>350</td>
<td>600</td>
<td>550</td>
<td>1,100</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>200</td>
<td>400</td>
<td>300</td>
<td>600</td>
</tr>
</tbody>
</table>
### 635--McConnel-Rasille association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>McConnel</td>
<td>Rasille</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td>20-50</td>
<td>5-10</td>
<td>20-30</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>10-20</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>2-5</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PGG</td>
<td>2-5</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-5</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-5</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Sickle saltbush</td>
<td>ATPA</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
</tr>
</tbody>
</table>

**Range site symbol**

- **024X005N**
- **028B010N**
- **028B010N**
- **028B010N**
- **024X012N**

**Potential production (lb/acre):**

- **Favorable years**: 800
- **Normal years**: 600
- **Unfavorable years**: 400
### 636--McConnel-Defler-Rasille association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>AFTRW*</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X005N</th>
<th>O24X004N</th>
<th>O28B010N</th>
<th>O24X004N</th>
<th>O28B010N</th>
<th>O24X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>500</td>
<td>800</td>
<td>500</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>350</td>
<td>600</td>
<td>350</td>
<td>600</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>200</td>
<td>400</td>
<td>200</td>
<td>400</td>
<td>300</td>
</tr>
</tbody>
</table>
637—McConnel-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
<td>McConnel</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPSG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>FPFF</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SS5S</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

Potential production (lb/acre):

- Favorable years
  - 800
  - 800
  - 800
  - 700
  - 800
  - 800

- Normal years
  - 600
  - 600
  - 600
  - 500
  - 600
  - 550

- Unfavorable years
  - 400
  - 400
  - 400
  - 250
  - 400
  - 300
638--McConnel-Wholan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SISH</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRM*</td>
<td>15-20</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>30-45</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O28B010N</th>
<th>O28B013N</th>
<th>O28B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>550</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>300</td>
</tr>
</tbody>
</table>
### 670--Filiaran-Pineval-Kingingham association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Filiran</td>
<td>Pineval</td>
<td>Kingingham</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STHO</td>
<td>10-20</td>
<td>10-20</td>
<td>5-15</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
<td>2-5</td>
<td>2-8</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATC0</td>
<td>---</td>
<td>---</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
<td>2-5</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>O28B01ON</th>
<th>O28B010N</th>
<th>O24X002N</th>
<th>O28B010N</th>
<th>O28B010N</th>
</tr>
</thead>
</table>

#### Potential production (lb/acre):

- **Favorable years**: 800 800 700 800 800
- **Normal years**: 600 600 450 600 600
- **Unfavorable years**: 400 400 300 400 400
674--Filiran-Buffaran association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soil name</td>
<td>Filiran</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCD4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFPP</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCD</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5A4</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O28B01ON</th>
<th>O28B01ON</th>
<th>O28B01ON</th>
<th>O28B01ON</th>
<th>O24X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800 800 800 800 700</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal years</td>
<td>600 600 600 600 450</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400 400 400 400 300</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 675--Filiaran-Buffaran-Orovada association

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Filiaran</td>
<td>Buffaran</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTWR*</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

### Range site symbol
- G28B010N
- O28B010N
- O28B010N
- O28B010N
- O28B010N

### Potential production (lb/acre):
- **Favorable years**: 800
- **Normal years**: 600
- **Unfavorable years**: 400
680--Skullwak-Umberland-Wendane association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Skullwak</td>
<td>Umberland</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>10-25</td>
</tr>
<tr>
<td>Nuttall alkaligrass</td>
<td>PUAI</td>
<td>5-10</td>
</tr>
<tr>
<td>Baltic rush</td>
<td>JUBA</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
</tr>
<tr>
<td>Cinquefoil</td>
<td>POTEN</td>
<td>5-10</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>20-35</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>T-5</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>T-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAE D</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X044N</th>
<th>O24X011N</th>
<th>O24X007N</th>
<th>None</th>
<th>O24X003N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>500</td>
<td>1,900</td>
<td>---</td>
<td>600</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>225</td>
<td>350</td>
<td>1,400</td>
<td>---</td>
<td>450</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>200</td>
<td>800</td>
<td>---</td>
<td>300</td>
<td>---</td>
</tr>
</tbody>
</table>
### 683—Ocala-Sonoma-Paranat association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ocala</td>
<td>Sonoma</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>40-60</td>
<td>2-5</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>15-30</td>
<td>15-40</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISP52</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Alkali muhly</td>
<td>MUAS</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Alkali bluegrass</td>
<td>POUJ</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Alkali cordgrass</td>
<td>SPGR</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowgrass</td>
<td>TRIGL</td>
<td>---</td>
<td>1-3</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FFFF</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>5-15</td>
<td>T-2</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>1-2</td>
<td>T-2</td>
</tr>
<tr>
<td>Silver buffaloberry</td>
<td>SHAR</td>
<td>---</td>
<td>T-2</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>---</td>
<td>T-2</td>
</tr>
<tr>
<td>Woods rose</td>
<td>ROWO</td>
<td>---</td>
<td>T-2</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Iodinebush</td>
<td>ALOC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Saltbush</td>
<td>ATRP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>024X007N</th>
<th>024X009N</th>
<th>024X009N</th>
<th>024X006N</th>
<th>024X010N</th>
<th>024X022N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>1,900</td>
<td>1,500</td>
<td>1,500</td>
<td>1,500</td>
<td>450</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,400</td>
<td>1,000</td>
<td>1,000</td>
<td>1,100</td>
<td>300</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>800</td>
<td>700</td>
<td>700</td>
<td>600</td>
<td>150</td>
</tr>
</tbody>
</table>
### 700—Orovada–Rasille–Wholan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Orovada</td>
<td>1</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleleafthread</td>
<td>STCO4</td>
<td></td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIFY</td>
<td></td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRN*</td>
<td></td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>02BB010N</th>
<th>02BB010N</th>
<th>024X004N</th>
<th>024X002N</th>
<th>024X006N</th>
<th>02BB010N</th>
<th>02BB003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>500</td>
<td>700</td>
<td>1,500</td>
<td>800</td>
<td>2,600</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>350</td>
<td>450</td>
<td>1,100</td>
<td>600</td>
<td>1,250</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>200</td>
<td>300</td>
<td>600</td>
<td>400</td>
<td>800</td>
</tr>
</tbody>
</table>
701--Orovada fine sandy loam, 2 to 4 percent slopes

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orovada</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needle thread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SINY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Thickspike wheatgrass</td>
<td>AGDA</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFH</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTBW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol          | 028BO1ON     | 024X02N    | 024X002N | 024X017N |
Potential production (lb/acre):  
Favorable years            | 800          | 700        | 700       | 900       |
Normal years                | 600          | 450        | 450       | 700       |
Unfavorable years           | 400          | 300        | 300       | 500       |
702--Orovada-Cremon association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Sand dropseed</td>
<td>SPCR</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTB*</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUA5</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O28B010N</th>
<th>O24X003N</th>
<th>O24X006N</th>
<th>O28B014N</th>
<th>O24X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>600</td>
<td>1,500</td>
<td>450</td>
<td>700</td>
</tr>
<tr>
<td>600</td>
<td>450</td>
<td>1,100</td>
<td>300</td>
<td>450</td>
</tr>
<tr>
<td>400</td>
<td>300</td>
<td>600</td>
<td>125</td>
<td>300</td>
</tr>
</tbody>
</table>

Potential production (lb/acre):

- Favorable years
- Normal years
- Unfavorable years
703--Orovada fine sandy loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Orovada</td>
<td>1</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td></td>
<td>15-25</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td></td>
<td>2-5</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td></td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STNL2</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ECL12</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Scarlet globemallow</td>
<td>SPCO</td>
<td>2-5</td>
<td></td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>2-5</td>
<td></td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td></td>
<td>15-25</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td></td>
<td>20-30</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td></td>
<td>5-10</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Greene rabbitbrush</td>
<td>CHGR6</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td></td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
</tr>
<tr>
<td>Normal years</td>
</tr>
<tr>
<td>Unfavorable years</td>
</tr>
</tbody>
</table>
704—Orovada-McConnel association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Orovada</td>
<td>McConnel   1  2  3</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>---</td>
<td>10-20  20-30  ---</td>
</tr>
<tr>
<td>Needlandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>---</td>
<td>10-20  ---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SINS</td>
<td>5-10</td>
<td>---</td>
<td>2-10  5-10  ---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>---</td>
<td>2-5     ---</td>
</tr>
<tr>
<td>Thumber needlegrass</td>
<td>STTH2</td>
<td>20-50</td>
<td>---</td>
<td>---     ---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>---</td>
<td>---     ---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>EL1C2</td>
<td></td>
<td>---</td>
<td>---     30-50</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td></td>
<td>---</td>
<td>2-5     ---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td></td>
<td>---</td>
<td>---     ---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td></td>
<td>---</td>
<td>15-25   ---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALS4</td>
<td></td>
<td>---</td>
<td>2-4     ---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
<td>---</td>
<td>2-4     ---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td></td>
<td>---</td>
<td>2-8     2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
<td>---     15-20  ---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td></td>
<td>2-5</td>
<td>---     ---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
<td>2-5</td>
<td>---     ---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULX5</td>
<td></td>
<td>60-70</td>
<td>---     ---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td>2-5</td>
<td>---     ---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td></td>
<td>---</td>
<td>5-10    ---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>5-15</td>
<td>5-15    5-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O28B010N</th>
<th>O24X005N</th>
<th>O24X004N</th>
<th>O28B010N</th>
<th>O28B003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>800</td>
<td>500</td>
<td>800</td>
<td>2,600</td>
</tr>
<tr>
<td>600</td>
<td>600</td>
<td>350</td>
<td>600</td>
<td>1,250</td>
</tr>
<tr>
<td>400</td>
<td>400</td>
<td>200</td>
<td>400</td>
<td>800</td>
</tr>
</tbody>
</table>

Potential production (lb/acre):
- Favorable years
- Normal years
- Unfavorable years
### 705--Orovada-Valmy association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orovada</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleanthread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>20-30</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>5-15</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>5-15</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>5-15</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>028B010N</th>
<th>024X022N</th>
<th>024X006N</th>
<th>028B010N</th>
<th>028B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>1,500</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>1,100</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>350</td>
<td>600</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>
### 751--Poorcal-Lopwash association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Poorcal</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>STHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSF</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PGFF</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5</td>
<td>---</td>
</tr>
<tr>
<td>Pouring saltbush</td>
<td>ATCA2</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSRS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O28B010N</th>
<th>O28B017N</th>
<th>O24X003N</th>
<th>O28B010N</th>
<th>O28B013N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>700</td>
<td>600</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>500</td>
<td>450</td>
<td>600</td>
<td>550</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>250</td>
<td>300</td>
<td>400</td>
<td>300</td>
</tr>
</tbody>
</table>
811--Ravenswood-Itca-Walti association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ravenswood</td>
<td>Itca</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>FOR++</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEKI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCUS3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIMY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPPG</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>APTR2</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHVIB</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Range site symbol
Woodland site symbol

Potential production (lb/acre):
Favorable years
Normal years
Unfavorable years
812--Ravenswood-Shagnasty-Walti association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ravenswood</td>
<td>Shagnasty</td>
<td>Walti</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
<td>X</td>
<td>25-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
<td>X</td>
<td>15-30</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>X</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Thurbert needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEKI2</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>PSC</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>X</td>
<td>X</td>
<td>5-15</td>
</tr>
<tr>
<td>Tapertip hawkweed</td>
<td>CRAC2</td>
<td>X</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
<td>X</td>
<td>2-5</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>X</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
<td>X</td>
<td>10-20</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHV18</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARRT*</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
<td>15-25</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>X</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
<td>X</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>Woodland site symbol</th>
<th>025X061N</th>
<th>025X061N</th>
<th>024X027N</th>
<th>028B024N</th>
<th>028B030N</th>
<th>None</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>500</td>
<td>1,200</td>
<td>2,800</td>
<td>1,000</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Normal years</td>
<td>375</td>
<td>375</td>
<td>800</td>
<td>1,700</td>
<td>850</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>250</td>
<td>600</td>
<td>1,000</td>
<td>550</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
</tbody>
</table>
850--Relley silt loam, 0 to 2 percent slopes

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td></td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td></td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td></td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
</tr>
</tbody>
</table>

Potential site symbol: 024X003N
Potential production (lb/acre):
- Favorable years: 700 700 600 600 600
- Normal years: 450 450 450 450 450
- Unfavorable years: 300 300 300 300 300
854--Relley silt loam, frequently flooded, 0 to 2 percent slopes

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
</table>
|                            |              | Soil name | Inclusion number-- |\[                      \]
|                            |              | Relley    | 1          | 2           | 3          |
| Indian ricegrass           | ORHY         | 10-30     | ---        | 5-15        | 5-15       |
| Bottlebrush squirreltail   | SIHY         | 5-10      | ---        | 5-15        | 5-15       |
| Alkali sacaton             | SPAI         | T-5       | ---        | ---         | ---        |
| Basin wildrye              | ELC12        | 50-60     | ---        | ---         | ---        |
| Western wheatgrass         | AGSM         | 5-15      | ---        | 2-5         | 2-5        |
| Sandberg bluegrass         | POSE         |           | 1-3        | 1-3         | ---        |
| Needleandthread            | STCO4        |           | 2-8        | 2-8         | 2-8        |
| Perennial forbs            | PFFF         | T-5       | 2-8        | 2-8         | 2-8        |
| Sickle saltbush            | ATFA         | 50-65     | ---        | ---         | ---        |
| Basin big sagebrush        | ARTRT*       | 15-20     | ---        | ---         | ---        |
| Black greasewood           | SAVE4        | 2-10      | ---        | ---         | ---        |
| Rubber rabbitbrush         | CHNA2        | 2-5       | ---        | ---         | ---        |
| Shadscale                  | ATCO         | 30-40     | 30-40      | 30-40       | 30-40      |
| Bud sagebrush              | ARSP5        | 20-30     | 20-30      | 20-30       | 20-30      |
| Spiny hopsage              | GRSP         | 2-5       | 2-5        | 2-5         | 2-5        |
| Winterfat                  | EUL5         | 2-5       | 2-5        | 2-5         | 2-5        |
| Other shrubs               | SSSS         |           | 2-5        | 2-5         | 2-5        |

Range site symbol: 024X012N  024X006N  024X002N  024X002N

Potential production (lb/acre):

- Favorable years: 700  1,500  700  700
- Normal years: 400  1,100  450  450
- Unfavorable years: 200  600  300  300
910--Rutab loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soil name</td>
<td>Inclusion number--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rutab</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORNY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>15-25</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRF*</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>028B010N</th>
<th>028B003N</th>
<th>028B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>2,600</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>1,250</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>800</td>
<td>400</td>
</tr>
</tbody>
</table>
931--Shagnasty-Roca-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Shagnasty</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
<td>40-60</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>FQA++</td>
<td>X</td>
<td>2-10</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>FONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
<td>2-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>T-5</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSF5</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 024X028N
Woodland site symbol: 025X061N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>02BX037N</th>
<th>028B038N</th>
<th>028B024N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>1,000</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>375</td>
<td>700</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>500</td>
<td>400</td>
</tr>
</tbody>
</table>

Potential production (lb/acre): 2,800
932--Shagnasty-Softscrabble association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Shagnasty</th>
<th>Softscabble</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
<td>20-40</td>
<td>25-50</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
<td>20-30</td>
<td>15-30</td>
<td>15-25</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td></td>
<td>2-15</td>
<td>---</td>
<td>---</td>
<td>30-50</td>
<td>---</td>
</tr>
<tr>
<td>Thurberry needlegrass</td>
<td>STTH2</td>
<td></td>
<td>2-10</td>
<td>2-10</td>
<td>15-25</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEK12</td>
<td></td>
<td></td>
<td>2-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Tufted hairgrass</td>
<td>DEXA5</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Alpine timothy</td>
<td>PHAL2</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>30-60</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Meadow barley</td>
<td>HOB2</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FFGG</td>
<td></td>
<td></td>
<td>---</td>
<td>10-20</td>
<td>5-15</td>
<td>2-10</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
<td>1-5</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
<td>1-5</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALS9</td>
<td></td>
<td></td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRWO</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Cinquefoil</td>
<td>POTEN</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FFFF</td>
<td></td>
<td></td>
<td>---</td>
<td>2-10</td>
<td>5-10</td>
<td>10-20</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td></td>
<td>5-15</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td></td>
<td>10-20</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHIV8</td>
<td></td>
<td></td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTW*</td>
<td></td>
<td></td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTB*</td>
<td></td>
<td></td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td></td>
<td></td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>X</td>
<td></td>
<td>2-10</td>
<td>5-10</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol         | 024X021N | 024X027N | 024X035N | 0288024N | 025X005N
Woodland site symbol      | 025X061N |           |           |           |           |

Potential production (lb/acre):
Favorable years: 500 1,400 1,200 500 2,800 2,000
Normal years: 375 1,000 800 400 1,700 1,700
Unfavorable years: 250 700 600 250 1,000 1,000
942—Shipley silt loam, occasionally flooded, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Shipley</td>
<td>1</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>15-25</td>
<td></td>
<td>2-5</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td></td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STC04</td>
<td>---</td>
<td>2-5</td>
<td>10-20</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EU LA5</td>
<td>30-45</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTET*</td>
<td>---</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Greene rabbitbrush</td>
<td>CHKGR6</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-10</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol          | 02B8013N     | 02B8009N     | 02B8010N     |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>550</td>
<td>400</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>
950—Silverado sandy loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>Silverado</td>
</tr>
<tr>
<td>Needleleanthread</td>
<td>STCO4</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td></td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td></td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTPW*</td>
<td></td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td></td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTBT*</td>
<td></td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O24X022N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>350</td>
</tr>
</tbody>
</table>
990--Sonoma-Wendane association

[ Absence of an entry indicates that the named plant is not a key species in the potential native plant community ]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sonoma</td>
<td>Wendane</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>50-60</td>
<td>40-60</td>
<td></td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>5-15</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>15-30</td>
<td></td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>---</td>
<td>5-10</td>
<td></td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>1-5</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Wildrye</td>
<td>ELIMU</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRWO</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTR*</td>
<td>15-20</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>2-10</td>
<td>5-15</td>
<td></td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>2-5</td>
<td>1-2</td>
<td></td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
<td>1-2</td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Silver sagebrush</td>
<td>ARCA13</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>024X006N</th>
<th>024X007N</th>
<th>025X003N</th>
<th>024X022N</th>
<th>025X001N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>1,500</td>
<td>1,900</td>
<td>2,500</td>
<td>800</td>
<td>3,000</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,100</td>
<td>1,400</td>
<td>1,900</td>
<td>600</td>
<td>2,500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>600</td>
<td>800</td>
<td>1,200</td>
<td>350</td>
<td>1,800</td>
</tr>
</tbody>
</table>
996--Sonoma-Paranat association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sonoma, frequently flooded</td>
<td>Paranat</td>
<td>Sonoma, occasionally flooded</td>
</tr>
<tr>
<td>Wildrye</td>
<td>ELYMU</td>
<td>30-60</td>
<td>30-60</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhy</td>
<td>MURI</td>
<td>2-10</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELGI2</td>
<td>---</td>
<td>---</td>
<td>50-60</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Alkalai sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-15</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRBO</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPF1</td>
<td>5-10</td>
<td>5-10</td>
<td>2-8</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTT</td>
<td>2-5</td>
<td>2-5</td>
<td>15-20</td>
</tr>
<tr>
<td>Silver sagebrush</td>
<td>ARCA13</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Alkalai rabbitbrush</td>
<td>CHALT</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Torrey quailbrush</td>
<td>ATTO</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-8</td>
<td>2-8</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: O25X001N O25X001N O24X006N O24X007N O28B003N O24X007N O24X015N

Potential production (lb/acre):

- Favorable years: 3,000 3,000 1,500 1,900 2,600 1,900 1,500
- Normal years: 2,500 2,500 1,100 1,400 1,250 1,400 1,200
- Unfavorable years: 1,800 1,800 600 800 800 800 800
999-Sonoma-Wendane-Paranat association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sonoma</td>
<td>Wendane</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>50-60</td>
<td>40-60</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Wildrye</td>
<td>ELYMU</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRWO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPF3</td>
<td>2-8</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAWE4</td>
<td>2-10</td>
<td>5-15</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>2-5</td>
<td>1-2</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Silver sagebrush</td>
<td>ARCA13</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
</tr>
<tr>
<td>Normal years</td>
</tr>
<tr>
<td>Unfavorable years</td>
</tr>
</tbody>
</table>
1011--Stampede-Handy-Caniwe association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Stampede</th>
<th>Handy</th>
<th>Caniwe</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>20-30</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td>15-25</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>2-10</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-10</td>
<td>5-10</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
<td>2-5</td>
<td>10-20</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>2-5</td>
<td>2-5</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>2-5</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>---</td>
<td>30-50</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSW</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>10-15</td>
<td>5-10</td>
<td>5-10</td>
<td>15-25</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPPP</td>
<td>2-5</td>
<td>5-10</td>
<td>5-10</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>10-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUT2</td>
<td>0-10</td>
<td>1-10</td>
<td>1-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTBN*</td>
<td>10-15</td>
<td>10-15</td>
<td>15-20</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rabbitbrush</td>
<td>CHRYS9</td>
<td>2-5</td>
<td>2-5</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTB*</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>025X014N</th>
<th>028B007N</th>
<th>028B007N</th>
<th>028B010N</th>
<th>028B003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>800</td>
<td>2,600</td>
</tr>
<tr>
<td>Normal years</td>
<td>800</td>
<td>750</td>
<td>750</td>
<td>600</td>
<td>1,250</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>400</td>
<td>800</td>
</tr>
</tbody>
</table>
1041--Tenabo-Orovada-Buffaran association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tenabo</td>
<td>Orovada</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>20-30</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STC04</td>
<td>1-3</td>
<td>10-20</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FFFF</td>
<td>2-8</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS6</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRH*</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTKT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>024X002N</th>
<th>028B010N</th>
<th>028B010N</th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X022N</th>
</tr>
</thead>
</table>

Potential production (lb/acre):

Favorable years
700  800  800  700  700  800

Normal years
450  600  600  450  450  600

Unfavorable years
300  400  400  300  300  350
### 1042—Tenabo-Ricert-Desatoya association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleleanthread</td>
<td>STCO4</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>20-50</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>2-10</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-20</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>2-5</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>1-2</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>20-30</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X030N</th>
<th>024X005N</th>
<th>024X020N</th>
<th>024X005N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>500</td>
<td>800</td>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>350</td>
<td>600</td>
<td>450</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>250</td>
<td>400</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>
## 1092--Tulase-Bubus-McConnel association

[The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tulase</td>
<td>Bubus</td>
<td>McConnell</td>
</tr>
<tr>
<td>Thubler needlegrass</td>
<td>STH2</td>
<td>20-50</td>
<td>---</td>
<td>20-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STC04</td>
<td>---</td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td>T-10</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALS4</td>
<td>2-4</td>
<td>---</td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
<td>---</td>
<td>2-4</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPF4</td>
<td>---</td>
<td>2-8</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hop sage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>30-40</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAD9</td>
<td>---</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
<td>2-5</td>
<td>2-10</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>O24X005N</th>
<th>O24X002N</th>
<th>O24X005N</th>
<th>O24X003N</th>
<th>O24X005N</th>
<th>O24X005N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>700</td>
<td>800</td>
<td>600</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>450</td>
<td>600</td>
<td>450</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>300</td>
<td>400</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>
1131--Fortank gravelly loam, 4 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Fortank</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
<td>20-30</td>
<td>15-25</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td></td>
<td>10-20</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td></td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td></td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td></td>
<td>2-5</td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTTW*</td>
<td></td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARM</td>
<td></td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5</td>
<td></td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td></td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>5-15</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>02BB01ON</th>
<th>02BB011N</th>
<th>02BB010N</th>
<th>02BB01ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>950</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>700</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>
1140--Wendane silt loam, frequently flooded

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wendane</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>40-60</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>15-30</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>5-15</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>1-2</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>1-2</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSPS</td>
<td>---</td>
</tr>
<tr>
<td>Sedgeweed</td>
<td>SUDAED</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 024X007N  024X003N  024X011N  024X006N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024X007N</th>
<th>024X003N</th>
<th>024X011N</th>
<th>024X006N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>1,900</td>
<td>600</td>
<td>500</td>
<td>1,500</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,400</td>
<td>450</td>
<td>350</td>
<td>1,100</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>800</td>
<td>300</td>
<td>200</td>
<td>600</td>
</tr>
</tbody>
</table>
### 1141—Wendane-Umberland association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Percentage composition and production (dry weight) of plants on major soils and inclusions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wendane, strongly sodic</td>
<td>Wendane, frequently flooded</td>
<td>Umberland</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCT2</td>
<td>15-25</td>
<td>40-60</td>
<td>T-5</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>5-10</td>
<td>15-30</td>
<td>40-70</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>2-5</td>
<td>5-10</td>
<td>T-15</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PGGG</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
<td>---</td>
<td>2-8</td>
</tr>
<tr>
<td>Silver buffaloberry</td>
<td>SHAR</td>
<td>10-20</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>5-15</td>
<td>5-15</td>
<td>2-5</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Iodinebush</td>
<td>ALOC2</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Saltbush</td>
<td>ATRIP</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>AMTRT*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>028B057N</th>
<th>024X007N</th>
<th>024X010N</th>
<th>024X006N</th>
<th>024X011N</th>
<th>None</th>
</tr>
</thead>
</table>

### Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>028B057N</th>
<th>024X007N</th>
<th>024X010N</th>
<th>024X006N</th>
<th>024X011N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>1,500</td>
<td>1,900</td>
<td>450</td>
<td>1,500</td>
<td>500</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,000</td>
<td>1,400</td>
<td>300</td>
<td>1,100</td>
<td>350</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>600</td>
<td>800</td>
<td>150</td>
<td>600</td>
<td>200</td>
<td>---</td>
</tr>
</tbody>
</table>
## 1142--Wendane-Gund association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wendane</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>40-60</td>
</tr>
<tr>
<td>Alkalí sacaton</td>
<td>SPAI</td>
<td>15-30</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>5-10</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIRY</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>5-15</td>
</tr>
<tr>
<td>Alkalí rabbitbrush</td>
<td>CHAL9</td>
<td>1-2</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>1-2</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Iodinebush</td>
<td>ALOC2</td>
<td>---</td>
</tr>
<tr>
<td>Saltbush</td>
<td>ATRIP</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X007N</th>
<th>O24X006N</th>
<th>O24X008N</th>
<th>O24X011N</th>
<th>O24X010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>1,900</td>
<td>1,500</td>
<td>800</td>
<td>500</td>
<td>450</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,400</td>
<td>1,100</td>
<td>600</td>
<td>350</td>
<td>300</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>800</td>
<td>600</td>
<td>400</td>
<td>200</td>
<td>150</td>
</tr>
</tbody>
</table>
1143--Wendane silt loam, occasionally flooded

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wendane</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>5-15</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>5-10</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFP</td>
<td>T-5</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>60-75</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>024X011N</th>
<th>024X007N</th>
<th>024X007N</th>
<th>024X007N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>1,900</td>
<td>1,900</td>
<td>1,900</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>1,400</td>
<td>1,400</td>
<td>1,400</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>200</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
</tbody>
</table>
**1145--Wendane-Playas association**

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wendane</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>5-15</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>5-10</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>T-5</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVEA</td>
<td>60-75</td>
</tr>
<tr>
<td>Iodinebush</td>
<td>ALOC2</td>
<td>---</td>
</tr>
<tr>
<td>Saltbush</td>
<td>ATRIP</td>
<td>---</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
</tr>
</tbody>
</table>

**Range site symbol**: O24X011N, O24X010N, O24X007N, O24X016N

**Potential production (lb/acre):**

- **Favorable years**: 500 lb/acre
- **Normal years**: 350 lb/acre
- **Unfavorable years**: 200 lb/acre
1146--Wendane-Sonoma-Valmy association

[The letter "\[\]" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>40-60</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>15-30</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>5-10</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
</tr>
<tr>
<td>Wildrye</td>
<td>ELYMU</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>---</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRWO</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVD4</td>
<td>5-15</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHL9</td>
<td>1-2</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>1-2</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTW*</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTW*</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>---</td>
</tr>
<tr>
<td>Silver sagebrush</td>
<td>ARCA13</td>
<td>---</td>
</tr>
<tr>
<td>Torrey quailbush</td>
<td>ATTO</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAE</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X007N</th>
<th>O24X006N</th>
<th>O24X022N</th>
<th>O25X001N</th>
<th>O24X015N</th>
<th>O24X003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>1,900</td>
<td>1,500</td>
<td>800</td>
<td>3,000</td>
<td>1,500</td>
<td>600</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,400</td>
<td>1,100</td>
<td>600</td>
<td>2,500</td>
<td>1,200</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>800</td>
<td>600</td>
<td>350</td>
<td>1,800</td>
<td>800</td>
<td>300</td>
</tr>
</tbody>
</table>
1148—Wendane-Babus association

[The letter "\textsuperscript{t}\textsubscript{m}"] means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community.

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wendane</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>40-60</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>15-30</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SINY</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>FFPPF</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>5-15</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>1-2</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>1-2</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAE0</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT\textsuperscript{*}</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hop sage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>024X007N</th>
<th>024X003N</th>
<th>024X006N</th>
<th>024X003N</th>
<th>024X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>1,900</td>
<td>600</td>
<td>1,500</td>
<td>600</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,400</td>
<td>450</td>
<td>1,100</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>800</td>
<td>300</td>
<td>600</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
### 1169--Whirlo-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>Whirlo</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>Broyles</td>
<td>20-30</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td></td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td></td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td></td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td></td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td></td>
<td>2-8</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
<td>30-40</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTHW*</td>
<td></td>
<td>15-20</td>
<td>30-35</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>5-15</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X002N</th>
<th>024X002N</th>
<th>02BB01ON</th>
<th>024X02ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>600</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>400</td>
<td>300</td>
</tr>
</tbody>
</table>
1173--Wholan silt loam, alkaline

[The letter "tr" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>10-30</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SFAI</td>
<td>T-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFF</td>
<td>T-5</td>
</tr>
<tr>
<td>Sickle saltbush</td>
<td>ATFA</td>
<td>50-65</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSPS</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSR</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTROW*</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X012N</th>
<th>O24X002N</th>
<th>O28B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>400</td>
<td>450</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>200</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>
1177--Wholan-Rasille association, alkaline

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>10-30</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>STHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>T-5</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>20-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>50-60</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Needle thread</td>
<td>STCO4</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>T-5</td>
</tr>
<tr>
<td>Sickle saltbrush</td>
<td>ATFA</td>
<td>50-65</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTBN*</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHV1P</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>2-10</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>024X012N</th>
<th>024X005N</th>
<th>024X006N</th>
<th>024X020N</th>
<th>024X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>800</td>
<td>1,500</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>400</td>
<td>600</td>
<td>1,100</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>200</td>
<td>400</td>
<td>600</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
1178—Wholan-Rasille association, nonalkaline

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wholan</td>
<td>Rasille</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>10-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td>---</td>
<td>10-20</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td></td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>T-5</td>
<td></td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>60-70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>15-20</td>
<td></td>
</tr>
<tr>
<td>Sickle saltbush</td>
<td>ATFA</td>
<td>---</td>
<td>50-65</td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>5-15</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X004N</th>
<th>O28B010N</th>
<th>O24X012N</th>
<th>O24X002N</th>
<th>O28B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>800</td>
<td>700</td>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>600</td>
<td>400</td>
<td>450</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>200</td>
<td>400</td>
<td>200</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>
### 1281--Ricert-Whirlo-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ricert</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>---</td>
</tr>
<tr>
<td>Hawksbeard</td>
<td>CREPI</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTIW*</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
</tr>
<tr>
<td>Normal years</td>
</tr>
<tr>
<td>Unfavorable years</td>
</tr>
</tbody>
</table>
1282--Ricert-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ricert</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td>1-3</td>
</tr>
<tr>
<td>Thumber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol: 024X002N 024X002N 024X002N 024X020N 024X002N

Potential production (lb/acre):
- Favorable years: 700 700 700 700 700
- Normal years: 450 450 450 450 450
- Unfavorable years: 300 300 300 300 300
1284--Ricert-Zineb-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
</tr>
<tr>
<td>Needleleandthread</td>
<td>STCO4</td>
<td></td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPPG</td>
<td></td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td></td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td></td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td></td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td></td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol | 024X002N | 028B01ON | 028B01ON | 028B017N | 024X022N | 028B01ON

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024X002N</th>
<th>028B01ON</th>
<th>028B01ON</th>
<th>028B017N</th>
<th>024X022N</th>
<th>028B01ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>800</td>
<td>800</td>
<td>700</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>600</td>
<td>600</td>
<td>500</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>400</td>
<td>400</td>
<td>250</td>
<td>350</td>
<td>400</td>
</tr>
</tbody>
</table>
### 1285—Ricert-Bubus-Broyles association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ricert</td>
<td>Bubus</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCT2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFG3</td>
<td>---</td>
<td>T-10</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>NTCC</td>
<td>30-40</td>
<td>30-50</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>5-15</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAE9</td>
<td>---</td>
<td>2-15</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTF9</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTF9</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSST</td>
<td>2-5</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X002N</th>
<th>024X003N</th>
<th>024X002N</th>
<th>028B010N</th>
<th>024X022N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>600</td>
<td>700</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>400</td>
<td>350</td>
</tr>
</tbody>
</table>
### 1286--Ricert-Tenabo-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ricert</td>
<td>Tenabo</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

| Range site symbol          | 024X002N     | 024X002N                                 | 024X002N  | 028B010N         | 028B010N| 024X002N|
| Potential production (lb/acre): |              |                                           |            |                  |         |          |
| Favorable years            | 700          | 700                                      | 700        | 800              | 800     | 700     |
| Normal years               | 450          | 450                                      | 450        | 600              | 600     | 450     |
| Unfavorable years          | 300          | 300                                      | 300        | 400              | 400     | 300     |
### 1287--Ricert-Orovada-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleleathread</td>
<td>STH2</td>
<td>1-3</td>
</tr>
<tr>
<td>Thumber needlegrass</td>
<td>STCH2</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>PDA++</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SFAHAE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PEPF</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUA5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ATRW9</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARABN</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSS</td>
<td>2-5</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X002N</th>
<th>O28B010N</th>
<th>O24X002N</th>
<th>O24X003N</th>
<th>O28B010N</th>
<th>O24X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>800</td>
<td>700</td>
<td>500</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>600</td>
<td>450</td>
<td>350</td>
<td>600</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>400</td>
<td>300</td>
<td>250</td>
<td>400</td>
<td>300</td>
</tr>
</tbody>
</table>
1288—Ricert-Orovada-Tenabo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Ricert</th>
<th>Orovada</th>
<th>Tenabo</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-10</td>
<td>5-15</td>
<td>2-10</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>20-30</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-10</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>10-20</td>
<td>1-3</td>
<td>---</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Taper tip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>2-5</td>
<td>2-8</td>
<td>---</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>---</td>
<td>30-40</td>
<td>---</td>
<td>30-40</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
<td>5-15</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTBW*</td>
<td>---</td>
<td>15-20</td>
<td>---</td>
<td>30-35</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>5-15</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>024X002N</th>
<th>028B010N</th>
<th>024X002N</th>
<th>024X020N</th>
<th>024X002N</th>
<th>024X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>800</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>600</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>400</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
1289—Ricert-Blackhawk-Orovada association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ricert</td>
<td>Blackhawk</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleleanthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPFG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPF</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTK*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAD</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTK*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSND</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol: 024X002N  024X002N  028B010N  024X002N  028B010N  024X002N  024X003N  024X006N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024X002N</th>
<th>024X002N</th>
<th>028B010N</th>
<th>024X002N</th>
<th>028B010N</th>
<th>024X002N</th>
<th>024X003N</th>
<th>024X006N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>800</td>
<td>700</td>
<td>800</td>
<td>600</td>
<td>1,500</td>
<td></td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>600</td>
<td>450</td>
<td>600</td>
<td>450</td>
<td>1,100</td>
<td></td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>400</td>
<td>300</td>
<td>400</td>
<td>300</td>
<td>600</td>
<td></td>
</tr>
</tbody>
</table>
1371--Chad-Gando-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chad</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>20-50</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRC5</td>
<td>2-15</td>
</tr>
<tr>
<td>Thurberry needlegrass</td>
<td>STTH2</td>
<td>2-5</td>
</tr>
<tr>
<td>Bottlebrush squireltail</td>
<td>SINT</td>
<td>2-5</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>1-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Tufted hairgrass</td>
<td>DECA5</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Alpine timothy</td>
<td>PHAL2</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
</tr>
<tr>
<td>Meadow barley</td>
<td>MORR2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>2-5</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRWO</td>
<td>---</td>
</tr>
<tr>
<td>Cinquefoil</td>
<td>PTEX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMIT</td>
<td>---</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

Potential site symbol: 024X029N 028B034N 028B030N 028B037N None 028B034N 025X005N

Potential production (lb/acre):

- Favorable years: 1,500 600 1,100 700 --- 600 2,000
- Normal years: 1,100 400 850 500 --- 400 1,700
- Unfavorable years: 800 250 550 300 --- 250 1,000
1450--Atlow-Stingdorn association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Atlow, steep</td>
<td>Atlow, strongly sloping</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>10-15</td>
<td>10-15</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>10-15</td>
<td>10-15</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>2-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>1-3</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPFF</td>
<td>5-20</td>
<td>5-20</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALS</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>---</td>
<td>2-8</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>25-35</td>
<td>25-35</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>APTRW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVPI</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSQS</td>
<td>5-35</td>
<td>5-35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X03ON</th>
<th>024X03ON</th>
<th>024X002N</th>
<th>024X005N</th>
<th>024X03ON</th>
<th>024X02ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>500</td>
<td>700</td>
<td>800</td>
<td>500</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>350</td>
<td>450</td>
<td>600</td>
<td>350</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>250</td>
<td>300</td>
<td>400</td>
<td>250</td>
<td>300</td>
</tr>
</tbody>
</table>
### 1670--Wieland-Allor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>20-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCT2</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPOG</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPTF</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSF</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
</tr>
</tbody>
</table>

**Range site symbol**: 024X005N 024X005N 024X005N 025X003N 024X020N

**Potential production (lb/acre):**

<table>
<thead>
<tr>
<th>Year</th>
<th>024X005N</th>
<th>024X005N</th>
<th>024X005N</th>
<th>025X003N</th>
<th>024X020N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>2,500</td>
<td>700</td>
</tr>
<tr>
<td>Normal</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>1,900</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>1,200</td>
<td>300</td>
</tr>
</tbody>
</table>
1680—Zineb gravelly loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Zineb</td>
<td>1</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>20-50</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>1-3</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>2-8</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>024X005N</th>
<th>024X002N</th>
<th>024X005N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>450</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>
1681--Zineb-Chiara-Wieland association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Soil name</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Zineb</td>
<td>Chiara</td>
<td>Wieland</td>
<td>1</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>20-50</td>
<td>20-50</td>
<td>20-50</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
<td>10-20</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>50-60</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-4</td>
<td>2-4</td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
<td>2-4</td>
<td>2-4</td>
<td>1-2</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRM*</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
<td>30-35</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>5-15</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
<td>2-10</td>
<td>2-10</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>024X005N</th>
<th>024X005N</th>
<th>024X005N</th>
<th>025X003N</th>
<th>024X020N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>2,500</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>1,900</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>1,200</td>
<td>300</td>
</tr>
</tbody>
</table>
1682—Zineb-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Zineb</td>
<td>Orovada</td>
<td>1</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>30-50</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPBG</td>
<td>---</td>
<td>---</td>
<td>15-25</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFB</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRKT*</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>028B01ON</th>
<th>028B03N</th>
<th>028B01ON</th>
<th>028B01ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>2,600</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>1,250</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>800</td>
</tr>
</tbody>
</table>
### 2003--Unius-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unius</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>15-25</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EILAS5</td>
<td>5-10</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Greene rabbitbrush</td>
<td>CHGR6</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O28B011N</th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B009N</th>
<th>O28B017N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>950</td>
<td>800</td>
<td>800</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>700</td>
<td>600</td>
<td>600</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>300</td>
<td>250</td>
</tr>
</tbody>
</table>
2010--Glyphs-Silverado association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Glyphs</td>
<td>Silverado</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Greene rabbitbrush</td>
<td>CHGR6</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O28BO10W</th>
<th>O28BO10N</th>
<th>O28BO10W</th>
<th>O28BO10N</th>
<th>O28BO10N</th>
<th>O28BO09N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>400</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>300</td>
</tr>
</tbody>
</table>
### Percentage composition and production (dry weight) of plants on major soils and inclusions

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Glyphs</th>
<th>Muni</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian ricegrass</td>
<td>GRHY</td>
<td></td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
<td>15-25</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STC04</td>
<td></td>
<td>10-20</td>
<td>10-20</td>
<td>10-20</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>S1MY</td>
<td></td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>30-50</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>FONE3</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Baltic rush</td>
<td>JUBA</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>15-25</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>FPFF</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW9</td>
<td></td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT9</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUUL5</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol
- **O28B010N**
- **O28B010N**
- **O28B010N**
- **O28B003N**
- **O28B011N**
- **O28B001N**

### Potential production (lb/acre):
- **Favorable years**
  - 800
  - 800
  - 800
  - 2,600
  - 950
  - 4,000
- **Normal years**
  - 600
  - 600
  - 600
  - 1,250
  - 700
  - 2,000
- **Unfavorable years**
  - 400
  - 400
  - 400
  - 800
  - 400
  - 1,200
### 2012--Glyphs-Muni-Orovada association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Glyphs</th>
<th>Muni</th>
<th>Orovada</th>
<th>Inclusion number--</th>
<th>Soil name</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
<td>10-30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
<td>10-20</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>30-50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PGGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
<td>15-25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>5-15</td>
<td>2-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTBW*</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
<td>10-25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purple sage</td>
<td>SADO2C</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>T-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>2-4</td>
<td>5-10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>028B01ON</th>
<th>028B01ON</th>
<th>028B01ON</th>
<th>025X025N</th>
<th>028B003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>200</td>
<td>2,600</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>150</td>
<td>1,250</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>100</td>
<td>800</td>
</tr>
</tbody>
</table>
2015--Glyphs-Enko association

[The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Glyphs, gently</td>
<td>Glyphs, moderately</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sloping</td>
<td>steep</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Thickspike wheatgrass</td>
<td>AGDA</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sand dropseed</td>
<td>SPGR</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PGG</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPF</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRN*</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol: 02BB010N 02BB010N 024X017N 02BB010N 02BB010N 028B005N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>O2BB010N</th>
<th>O2BB010N</th>
<th>O24X017N</th>
<th>O2BB010N</th>
<th>O2BB010N</th>
<th>O28B005N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>900</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>700</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>500</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>
## 2021--Rotinom-Wholan association

[The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFOG</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFH</td>
<td>5-10</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Sickle saltbush</td>
<td>ATFA</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTFT</td>
<td>---</td>
</tr>
<tr>
<td>Greene rabbitbrush</td>
<td>CHGR6</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTW</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>O28B017N</th>
<th>O28B013N</th>
<th>O24X012N</th>
<th>O28B003N</th>
<th>O28B009N</th>
<th>O28B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>800</td>
<td>700</td>
<td>2,600</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>500</td>
<td>550</td>
<td>400</td>
<td>1,250</td>
<td>400</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>300</td>
<td>200</td>
<td>800</td>
<td>300</td>
</tr>
</tbody>
</table>
2022--Rotinom-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI12</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPO8</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFPF</td>
<td>5-10</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5</td>
<td>2-5</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Greene rabbitbrush</td>
<td>CHGN6</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>O28B017N</th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B009N</th>
<th>O28B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>800</td>
<td>800</td>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>500</td>
<td>600</td>
<td>600</td>
<td>400</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>400</td>
<td>400</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>
### 2031--Muni-Orovada-Unius association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Muni</td>
<td>Orova</td>
</tr>
<tr>
<td>Needlestemthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sand dropseed</td>
<td>SPCR</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grass</td>
<td>FPGG</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPFN</td>
<td>2-10</td>
<td>2-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Winterfat</td>
<td>ELU5</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

**Range site symbol**

<table>
<thead>
<tr>
<th></th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B011N</th>
<th>O28B013N</th>
<th>O24X045N</th>
<th>O28B00SN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>950</td>
<td>800</td>
<td>350</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>700</td>
<td>550</td>
<td>200</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>300</td>
<td>100</td>
<td>400</td>
</tr>
</tbody>
</table>
2060--Oxcorel-Beoska-Whirlo association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Oxcorel</th>
<th>Beoska</th>
<th>Whirlo</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>2-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-10</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO</td>
<td>1-3</td>
<td>1-3</td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PGGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPF 4</td>
<td>2-8</td>
<td>2-8</td>
<td>2-8</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
<td>30-40</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>5-15</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL45</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTW*</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>30-35</td>
</tr>
<tr>
<td>Brown greasewood</td>
<td>SAV14</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SVAE</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVI</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol          
024X002N  024X002N  024X002N  024X020N  024X003N  024X005N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X020N</th>
<th>024X003N</th>
<th>024X005N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>600</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>
2061--Oxcorl-Zaidy-Grassval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Soil name</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Oxcorl</td>
<td>Zaidy</td>
<td>Grassval</td>
<td>1</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SITHY</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCT12</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Scarlet globemallow</td>
<td>SPCO</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O28B017N</th>
<th>O28B011N</th>
<th>O28B011N</th>
<th>O28B010N</th>
<th>O28B052N</th>
<th>O28B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>950</td>
<td>950</td>
<td>800</td>
<td>600</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>500</td>
<td>700</td>
<td>700</td>
<td>600</td>
<td>400</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>
2063—Oxcorel—Pineal association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>oxcorel</th>
<th>Pineal, moderately steep</th>
<th>Pineal, strongly sloping</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>10-20</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Thumber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>20-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-4</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-4</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-4</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsedge</td>
<td>GRSP</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
<td>5-15</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>15-20</td>
<td>15-20</td>
<td>15-30</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVMP</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>5-15</td>
<td>5-15</td>
<td>2-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>700</td>
<td>350</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>450</td>
<td>200</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>300</td>
<td>100</td>
<td>400</td>
</tr>
</tbody>
</table>
## 2069--Oxcorel-Wieland-Spasprey association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Oxcorel</td>
<td>Wieland</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SITHY 5-15</td>
<td>---</td>
<td>5-15</td>
<td>2-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY 5-15</td>
<td>---</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POG 2-5</td>
<td>---</td>
<td>2-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4 1-3</td>
<td>---</td>
<td>---</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2 20-50</td>
<td>20-50</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP 5-10</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA 2-4</td>
<td>2-4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2 2-4</td>
<td>2-4</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE 2-4</td>
<td>2-4</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX 2-8</td>
<td>2-8</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF 2-8</td>
<td>2-8</td>
<td>---</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO 30-40</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP 20-30</td>
<td>---</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP 2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>HILA5 2-5</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTWN* 15-20</td>
<td>15-20</td>
<td>---</td>
<td>30-35</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP 2-5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS 2-5</td>
<td>2-10</td>
<td>2-10</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X002N</th>
<th>024X005N</th>
<th>024X005N</th>
<th>024X020N</th>
<th>024X002N</th>
<th>024X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>800</td>
<td>800</td>
<td>700</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>600</td>
<td>600</td>
<td>450</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>400</td>
<td>400</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
2081--Fenster-Jesse Camp association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIRY</td>
<td></td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td></td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td></td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPPP</td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td></td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td></td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTET*</td>
<td></td>
</tr>
<tr>
<td>Greene rabbitbrush</td>
<td>CHGR6</td>
<td></td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTW*</td>
<td></td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td></td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAE</td>
<td></td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol: 028B017N 028B009N 028B010N 024X003N 028B004N

Potential production (lb/acre):
- Favorable years: 700 700 800 600 2,000
- Normal years: 500 400 600 450 1,000
- Unfavorable years: 250 300 400 300 500
2088--Punchbowl-Jung-Teguro association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
</tr>
<tr>
<td>Thurbre needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFFS</td>
<td>5-10</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>5-15</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUO8</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 028B016N, 028B016N, 024X030N, 024X002N, 024X016N

Woodland site symbol: --- 025X062N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
</tr>
<tr>
<td>Normal years</td>
</tr>
<tr>
<td>Unfavorable years</td>
</tr>
<tr>
<td>500</td>
</tr>
<tr>
<td>250</td>
</tr>
<tr>
<td>150</td>
</tr>
</tbody>
</table>
2089--Punchbowl-Jung-Locane association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Punchbowl</td>
<td>Jung</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-25</td>
<td>20-25</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTHW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EILA5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
<td>10-20</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>O28B016N</th>
<th>O28B016N</th>
<th>O28B01ON</th>
<th>None</th>
<th>O28B01ON</th>
<th>O28B017N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>500</td>
<td>800</td>
<td>---</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>250</td>
<td>600</td>
<td>---</td>
<td>600</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>150</td>
<td>400</td>
<td>---</td>
<td>400</td>
<td>250</td>
</tr>
</tbody>
</table>
2090--Punchbowl gravelly loam, 4 to 15 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>GRHY</td>
<td>5-15</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Needleleathread</td>
<td>STCO4</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
<td>10-20</td>
<td>2-5</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>5-10</td>
<td>5-15</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-10</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>5-15</td>
<td>5-12</td>
<td>5-10</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-25</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>15-25</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>---</td>
<td>25-30</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
<td>5-15</td>
<td>10-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>028B016N</th>
<th>028B030N</th>
<th>028B045N</th>
<th>None</th>
</tr>
</thead>
</table>

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>028B016N</th>
<th>028B030N</th>
<th>028B045N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>1,100</td>
<td>800</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>850</td>
<td>600</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>550</td>
<td>400</td>
<td>---</td>
</tr>
</tbody>
</table>
2091--Punchbowl-Teguro-Sumine association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Punchbowl</td>
<td>Teguro</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>10-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>10-15 X</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>2-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
<td>20-50</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>X</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>X</td>
<td>---</td>
<td>1-10</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
<td>---</td>
<td>2-15</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td></td>
<td>2-5</td>
<td>3-5</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>FOCU3</td>
<td></td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td></td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-20</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td></td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>25-35</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td></td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td></td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td></td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td></td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-35</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td></td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td></td>
<td>---</td>
<td>X</td>
</tr>
</tbody>
</table>

Range site symbol | O24X030N | --- | O24X029N | None | O24X023N | 028B003N
Woodland site symbol | --- | O25X062N | --- | None | --- | ---

Potential production (lb/acre):
Favorable years | 500 | 500 | 1,500 | --- | 1,500 | 2,600
Normal years   | 350 | 350 | 1,100 | --- | 1,200 | 1,250
Unfavorable years | 250 | 200 | 800  | --- | 900  | 800
### Percentage composition and production (dry weight) of plants on major soils and inclusions

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Punchbowl</td>
<td>Belate</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
<td>15-30</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
<td>25-50</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>SSTH2</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEK12</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>FONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>ASWM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-25</td>
<td>---</td>
</tr>
<tr>
<td>Pourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSB5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHVI8</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre)</th>
<th>028B016N</th>
<th>024X027N</th>
<th>024X021N</th>
<th>None</th>
<th>028B016N</th>
<th>028B003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>1,200</td>
<td>1,400</td>
<td>---</td>
<td>500</td>
<td>2,600</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>800</td>
<td>1,000</td>
<td>---</td>
<td>250</td>
<td>1,250</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>600</td>
<td>700</td>
<td>---</td>
<td>150</td>
<td>800</td>
</tr>
</tbody>
</table>
2093—Punchbowl—Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Punchbowl</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIMY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-10</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-25</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
</tr>
<tr>
<td>Current</td>
<td>RIBES</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRN*</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 02BB016N
Woodland site symbol: None

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>O2BB016N</th>
<th>None</th>
<th>None</th>
<th>028B016N</th>
<th>028B018N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>350</td>
<td>250</td>
<td>250</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>200</td>
<td>150</td>
<td>150</td>
<td>400</td>
</tr>
</tbody>
</table>
### 2094--Punchbowl-Simpark-Akerue association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Punchbowl</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>PESC</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-15</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
</tr>
</tbody>
</table>

Range site symbol: O28B016N  O28B016N  O28B016N  O28B010N  None  024X002N

Potential production (lb/acre):

- Favorable years: 500  500  500  800  ---  700
- Normal years: 250  250  250  600  ---  450
- Unfavorable years: 150  150  150  400  ---  300
2095—Punchbowl-Robson-Rock outcrop association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Punchbowl</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurbie needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-25</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARB5P</td>
<td>2-5</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARARB</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRN*</td>
<td>---</td>
</tr>
<tr>
<td>Rabbitbrush</td>
<td>CHRYS9</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
</tr>
</tbody>
</table>

Range site symbol: O28B016N, O28B045N, None, O28B003N, O28B007N, O28B037N

Potential production (lb/acre):

- Favorable years: 500, 800, 2,600, 1,000, 700
- Normal years: 250, 600, 1,250, 750, 500
- Unfavorable years: 150, 400, 800, 600, 300
2096--Punchbowl-Locane-Nobuck association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Punchbowl</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurbear needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPOG</td>
<td>5-10</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSAL</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPPF</td>
<td>5-15</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Rabbitbrush</td>
<td>CHERYS9</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTP2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
</tr>
<tr>
<td>Normal years</td>
</tr>
<tr>
<td>Unfavorable years</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
</tr>
<tr>
<td>Normal years</td>
</tr>
<tr>
<td>Unfavorable years</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
</tr>
<tr>
<td>Normal years</td>
</tr>
<tr>
<td>Unfavorable years</td>
</tr>
</tbody>
</table>
### 2097--Punchbowl-Itca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
</tbody>
</table>
| Indian ricegrass       | ORHY         | 5-15      | ---               | ---       | ---  | X | --- | 5-10
| Needleandthread        | STCD4        | 5-15      | ---               | ---       | ---  | --- | 2-5 | ---
| Pine bluegrass         | PESC         | 2-5       | ---               | ---       | ---  | --- | 2-5 | ---
| Bluebunch wheatgrass   | AGSP         | 1-3       | X                 | ---       | ---  | X | --- | 5-10
| Idaho fescue           | FEID         | ---       | X                 | ---       | ---  | --- | --- | ---
| Bluegrass              | POA++        | ---       | X                 | ---       | ---  | X | --- | ---
| Thurbber needlegrass   | STTH2        | ---       | ---               | ---       | ---  | X | 20-30 | ---
| Other perennial grasses| PFGG         | 5-10      | X                 | ---       | ---  | X | --- | 5-10
| Tapertip hackensbeard  | CRAC2        | ---       | X                 | ---       | ---  | --- | --- | ---
| Arrowleaf balsamroot   | BASA3        | ---       | X                 | ---       | ---  | X | --- | ---
| Other perennial forbs  | PPFF         | 5-15      | ---               | ---       | ---  | X | --- | 5-10
| Black sagebrush        | ARARN        | 20-25     | ---               | ---       | ---  | X | --- | ---
| Fourwing saltbush      | ATCA2        | 2-5       | ---               | ---       | ---  | --- | --- | ---
| Bud sagebrush          | ARSP5        | 2-5       | ---               | ---       | ---  | --- | --- | ---
| Big sagebrush          | ARTR2        | ---       | X                 | ---       | ---  | --- | --- | ---
| Downy rabbitbrush      | CHVIP        | ---       | ---               | ---       | ---  | X | --- | ---
| Wyoming big sagebrush  | ARTRW*       | ---       | ---               | ---       | ---  | --- | 10-15 | ---
| Rabbitbrush            | CHRY99       | ---       | ---               | ---       | ---  | --- | 2-5 | ---
| Antelope bitterbrush   | PUTR2        | ---       | ---               | X         | ---  | X | 1-10 | ---
| Other shrubs           | SSSS         | 10-20     | X                 | ---       | ---  | --- | --- | ---
| Singleleaf pinyon      | PIMO         | ---       | X                 | ---       | ---  | X | --- | ---
| Utah juniper           | JUOG         | ---       | ---               | ---       | ---  | --- | --- | ---

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>028B016N</th>
<th>---</th>
<th>None</th>
<th>028B007N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland site symbol</td>
<td>---</td>
<td>025X061N</td>
<td>None</td>
<td>025X063N</td>
</tr>
</tbody>
</table>

### Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>Favorable years</th>
<th>Normal years</th>
<th>Unfavorable years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>500</td>
<td>375</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>275</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>1,000</td>
<td>750</td>
<td>600</td>
</tr>
</tbody>
</table>
2099--Punchbowl-Roca-Rock outcrop association

[The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Punchbowl</td>
<td>Roca</td>
<td>Rock outcrop</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
<td>40-60</td>
<td>---</td>
</tr>
<tr>
<td>Thurrey needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FE1D</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPSS</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebush</td>
<td>ARARN</td>
<td>20-25</td>
<td>---</td>
<td>20-25</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebush</td>
<td>ARS5</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>T-5</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSOP</td>
<td>10-20</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>028B016N</th>
<th>024X028N</th>
<th>None</th>
<th>028B016N</th>
<th>025X014N</th>
<th>024X021N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>1,000</td>
<td>---</td>
<td>500</td>
<td>1,000</td>
<td>1,400</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>700</td>
<td>---</td>
<td>250</td>
<td>800</td>
<td>1,000</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>500</td>
<td>---</td>
<td>150</td>
<td>600</td>
<td>700</td>
</tr>
</tbody>
</table>
### 2100--Grassval-Grina-Unsel Variant association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community.]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grassval</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>10-15</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>10-15</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>2-10</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>S1HY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-20</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>2-5</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>25-35</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CVV18</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRWm</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHV1P</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>FUPT2</td>
<td>---</td>
</tr>
<tr>
<td>Purple sage</td>
<td>SADOC2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-35</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUCS</td>
<td>---</td>
</tr>
</tbody>
</table>

| Range site symbol       | O24X03ON     | ---     | O24X020N | O24X010N | O24X020N | O24X020N | O24X020N | O25X025N |
| Woodland site symbol    | ---          | O25X059N | ---      | ---      | ---      | ---      | ---      | ---      |

Potential production (lb/acre):

- **Favorable years**: 500 500 700 700 700 500 200
- **Normal years**: 350 350 450 450 450 350 150
- **Unfavorable years**: 250 200 300 300 300 250 100
### 2101—Grassval-Oxcorel association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Grassval</td>
<td>Oxcorel, eroded</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Thurner needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPOC</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHE</td>
<td>---</td>
<td>2-4</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFF</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTBN*</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>2-5</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>028B011N</th>
<th>024X045N</th>
<th>028B017N</th>
<th>028B010N</th>
<th>024X025N</th>
<th>024X045N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>950</td>
<td>350</td>
<td>700</td>
<td>800</td>
<td>250</td>
<td>350</td>
</tr>
<tr>
<td>Normal years</td>
<td>700</td>
<td>200</td>
<td>500</td>
<td>600</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>100</td>
<td>250</td>
<td>400</td>
<td>75</td>
<td>100</td>
</tr>
</tbody>
</table>
2102--Grassval-Wieland association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Grassval</td>
<td>Wieland</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>15-25</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-10</td>
<td>10-20</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thuber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>FOGC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPOG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Ericognum</td>
<td>ERIOG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Hawksbeard</td>
<td>CREPI</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GSRS</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CVVIP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pouring saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>028B011N</th>
<th>028B010N</th>
<th>024X026N</th>
<th>028B017N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>950</td>
<td>800</td>
<td>400</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>700</td>
<td>600</td>
<td>300</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>200</td>
<td>250</td>
</tr>
</tbody>
</table>
**2104--Grassval-Punchbowl association**

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Grassval</td>
<td>Punchbowl</td>
<td>1</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
<td>15-25</td>
<td>5-15</td>
<td>15-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td></td>
<td>5-10</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td></td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td></td>
<td>2-5</td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td></td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Thurbre needlegrass</td>
<td>STTH2</td>
<td></td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td></td>
<td>---</td>
<td>5-10</td>
<td>5-15</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td></td>
<td>---</td>
<td>---</td>
<td>2-4</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td></td>
<td>5-10</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td></td>
<td>20-30</td>
<td>20-25</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td></td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td></td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td></td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td></td>
<td>---</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td></td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>---</td>
<td>10-20</td>
<td>2-5</td>
</tr>
</tbody>
</table>

**Range site symbol**

<table>
<thead>
<tr>
<th>O28B011N</th>
<th>O28B016N</th>
<th>O24X045N</th>
<th>None</th>
<th>O28B003N</th>
<th>O28B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>950</td>
<td>500</td>
<td>350</td>
<td>---</td>
<td>2,600</td>
</tr>
<tr>
<td>Normal years</td>
<td>700</td>
<td>250</td>
<td>200</td>
<td>---</td>
<td>1,250</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>150</td>
<td>100</td>
<td>---</td>
<td>800</td>
</tr>
</tbody>
</table>
### 2105--Grassval-Glyphs-Muni association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Grassval</td>
<td>Glyphs</td>
</tr>
<tr>
<td>Needleleafthread</td>
<td>STCO4</td>
<td>5-10</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTGB*</td>
<td>---</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTGB*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

**Potential production (lb/acre):**
- **Favorable years:**
  - 950 800 800 800 950 2,600
- **Normal years:**
  - 700 600 600 600 700 1,250
- **Unfavorable years:**
  - 400 400 400 400 400 800
2110--Isolde-Davey association

[The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Isolde</td>
<td>Davey 1</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td>10-15</td>
<td>20-30</td>
</tr>
<tr>
<td>Thickspike wheatgrass</td>
<td>AGDA</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFN</td>
<td>2-5</td>
<td>10-20</td>
</tr>
<tr>
<td>Hairy horsebrush</td>
<td>TECO2</td>
<td>30-40</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Nevada dalea</td>
<td>PSPO</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Littleleaf horsebrush</td>
<td>TEGL</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>T-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRN*</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSSS</td>
<td>2-10</td>
<td>5-15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>027X023N</th>
<th>024X017N</th>
<th>028B010N</th>
<th>024X002N</th>
<th>028B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>300</td>
<td>900</td>
<td>800</td>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>200</td>
<td>700</td>
<td>600</td>
<td>450</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>100</td>
<td>500</td>
<td>400</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>
## 2540 -- Buffaran-Wieland association

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
<td>Buffaran</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td>20-50</td>
<td>20-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-4</td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
<td>2-4</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
<td>2-10</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>O24X005N</th>
<th>O24X005N</th>
<th>O24X005N</th>
<th>O24X005N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>
2541—Buffaran-Zoesta association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Buffaran</td>
<td>Zoesta</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>20-50</td>
<td>15-20</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>15-20</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>5-8</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>5-8</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>5-8</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>FONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BAISA</td>
<td>2-4</td>
<td>2-5</td>
</tr>
<tr>
<td>Tapotip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
<td>2-5</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>1-3</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTW*</td>
<td>15-20</td>
<td>5-10</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHV1P</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARFR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTF2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
<td>2-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>024X005N</th>
<th>024X018N</th>
<th>024X035N</th>
<th>025X003N</th>
<th>025X014N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>700</td>
<td>500</td>
<td>250</td>
<td>1,000</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>500</td>
<td>400</td>
<td>190</td>
<td>800</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>300</td>
<td>250</td>
<td>120</td>
<td>600</td>
</tr>
</tbody>
</table>
## 2542—Buffaran-Chiara association

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Buffaran, gravelly</td>
<td>Chiara</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buffaran, very gravelly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

### Range site symbol

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>028B01GN</th>
<th>028B01ON</th>
<th>028B01ON</th>
<th>028B01ON</th>
<th>028B01ON</th>
<th>028B01ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>
### 2543--Buffaran-Spasyre-Allor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SITY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPPF</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

### Range site symbol

- 028B010N
- 028B010N
- 028B010N
- 028B010N
- 028B017N
- 028B010N

### Potential production (lb/acre):

- **Favorable years:**
  - 800
  - 800
  - 800
  - 800
  - 700
  - 800

- **Normal years:**
  - 600
  - 600
  - 600
  - 600
  - 500
  - 600

- **Unfavorable years:**
  - 400
  - 400
  - 400
  - 400
  - 250
  - 400
### 2545--Buffaran-Pineal association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Buffaran</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>OMYH</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCD4</td>
<td>10-20</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SHY</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRM*</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

**Range site symbol:**

<table>
<thead>
<tr>
<th>O28B01ON</th>
<th>O28B01ON</th>
<th>O28B01ON</th>
<th>O28B01ON</th>
<th>O28B003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>
2546--Buffaran-Spasley-Locane association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th></th>
<th></th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>Buffaran</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasley</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>Buffaran</td>
<td>10-20</td>
<td>10-20</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasley</td>
<td>10-20</td>
<td>10-20</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>10-20</td>
<td>10-20</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>Buffaran</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasley</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>Buffaran</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasley</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>Buffaran</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>30-50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasley</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>30-50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>30-50</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>Buffaran</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasley</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>Buffaran</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasley</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>Buffaran</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>15-25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasley</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>15-25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>15-25</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>Buffaran</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasley</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTR*</td>
<td>Buffaran</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasley</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTR*</td>
<td>Buffaran</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasley</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>Buffaran</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasley</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol: O28B010N  O28B010N  O28B010N  O28B010N  O28B003N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>2,600</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>1,250</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>800</td>
</tr>
</tbody>
</table>
2547--Buffaran-Desatoya association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buffaran</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>10-40</td>
</tr>
<tr>
<td>Thurbir needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTHW*</td>
<td>10-20</td>
</tr>
<tr>
<td>Spiny bopseage</td>
<td>GRSP</td>
<td>10-20</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>5-10</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>5-10</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O27X008N</th>
<th>O27X032N</th>
<th>O27X008N</th>
<th>O27X008N</th>
<th>O27X032N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>600</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>500</td>
<td>400</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>200</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
### 2548---Buffaran-Tenabo-Pineal association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th></th>
<th></th>
<th>Inclusion number--</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Buffaran</td>
<td>Tenabo</td>
<td>Pineval</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>1-3</td>
<td>10-20</td>
<td></td>
<td>10-20</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-15</td>
<td>5-10</td>
<td></td>
<td>5-10</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td></td>
<td>2-5</td>
<td></td>
</tr>
<tr>
<td>Thurbere needlegrass</td>
<td>STTH2</td>
<td></td>
<td></td>
<td></td>
<td>10-15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td></td>
<td></td>
<td></td>
<td>2-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>Pagg</td>
<td></td>
<td></td>
<td></td>
<td>5-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gomoglobin</td>
<td>SPHAE</td>
<td></td>
<td></td>
<td></td>
<td>2-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>2-5</td>
<td>2-8</td>
<td>2-5</td>
<td></td>
<td>2-5</td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRN*</td>
<td>15-20</td>
<td></td>
<td>15-20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
<td>30-40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td></td>
<td>20-30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
<td>2-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUA5</td>
<td></td>
<td>2-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td></td>
<td></td>
<td></td>
<td>25-35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>2-5</td>
<td>5-15</td>
<td></td>
<td>5-15</td>
<td></td>
</tr>
</tbody>
</table>

| Range site symbol          | 026BO10N     | 024X002N       | 026BO10N   | 024X03ON   | 026BO10N          | 024X03ON |
| Potential production (lb/acre): |           |           |           |           |                   |          |
| Favorable years            | 800         | 700         | 800       | 500        | 800               | 500      |
| Normal years               | 600         | 450         | 600       | 350        | 600               | 350      |
| Unfavorable years          | 400         | 300         | 400       | 250        | 400               | 250      |
### 2554--Laped-Hooplite-Osoll association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Laped</td>
<td>Hooplite</td>
<td>Osoll</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td>1-3</td>
<td>5-15</td>
<td>1-3</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPFG</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>FFFF</td>
<td>2-8</td>
<td>5-15</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>---</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>2-5</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAT4</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>20-25</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>10-20</td>
<td>2-5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X002N</th>
<th>028B016N</th>
<th>024X002N</th>
<th>None</th>
<th>024X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>500</td>
<td>700</td>
<td>---</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>250</td>
<td>450</td>
<td>---</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>150</td>
<td>300</td>
<td>---</td>
<td>300</td>
</tr>
</tbody>
</table>
### 2555--Laped-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squarreltail</td>
<td>SIHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
</tr>
<tr>
<td>Thumber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPPG</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BLSA</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>---</td>
</tr>
<tr>
<td>Hawksbeard</td>
<td>CREPI</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHEL</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPP</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUAS</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>PKFRW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X002N</th>
<th>024X005N</th>
<th>024X002N</th>
<th>024X026N</th>
<th>024X045N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>800</td>
<td>700</td>
<td>400</td>
<td>350</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>600</td>
<td>450</td>
<td>300</td>
<td>200</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>400</td>
<td>300</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>
2570—Colbar-Atlow-Burrita association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Thubur needlegrass</td>
<td>STTH2</td>
<td>20-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Needledandthatch</td>
<td>STCO4</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSAB</td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPAE</td>
<td>2-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARN</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARS5</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBS</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol          | 024X005N | 024X030N | 024X005N | 024X005N | None | 024X002N | --- |
Woodland site symbol        | ---      | ---      | ---      | ---      | None | ---      | 025X062N |

Potential production (lb/acre):
Favorable years 800 500 800 800 700 500
Normal years 600 350 600 600 450 350
Unfavorable years 400 250 400 400 300 200
2603—Grina-Genaw association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Grina</td>
<td>Genaw</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>X</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>POE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHVI8</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol
Woodland site symbol
Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>025X059N</th>
<th>02BB010N</th>
<th>02BB010N</th>
<th>02BB003N</th>
<th>024X035N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>800</td>
<td>800</td>
<td>2,600</td>
<td>500</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>600</td>
<td>600</td>
<td>1,250</td>
<td>400</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>200</td>
<td>400</td>
<td>400</td>
<td>800</td>
<td>250</td>
</tr>
</tbody>
</table>
2640--Rasille-Kelk association

[The letter "t" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rasille</td>
<td>Kelk</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Needlearid thread</td>
<td>STCO4</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSR</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>50-60</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPAI</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPFF</td>
<td>2-5</td>
<td>2-8</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>15-20</td>
<td>15-30</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>2-10</td>
<td>15-30</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-50</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-15</td>
<td>20-30</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAEO</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUUL5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSE</td>
<td>5-15</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol 02BB01CN 024X006N 024X003N 024X002N 024X007N

Potential production (lb/acre):

- Favorable years
  - 800
- Normal years
  - 600
- Unfavorable years
  - 400
2672--Zoesta Variant-Jung-Trunk association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil composition (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Zoesta Variant</td>
<td>Jung</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>10-15</td>
<td>10-15</td>
</tr>
<tr>
<td>Thurner needlegrass</td>
<td>SYTH2</td>
<td>10-15</td>
<td>10-15</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>2-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-20</td>
<td>5-20</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Taper tip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARABN</td>
<td>25-35</td>
<td>25-35</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-35</td>
<td>5-35</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: O2X03ON, O2X03ON, O2X005N, O2X045N
Woodland site symbol: O2X062N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>O2X03ON</th>
<th>O2X03ON</th>
<th>O2X005N</th>
<th>O2X045N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>500</td>
<td>800</td>
<td>500</td>
<td>350</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>350</td>
<td>600</td>
<td>350</td>
<td>200</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>250</td>
<td>400</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>
2681--Tessfive-Puett-Grina association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Tessfive</th>
<th>Puett</th>
<th>Grina</th>
<th>Inclusion number--</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>10-15</td>
<td>10-30</td>
<td>X</td>
<td>20-30</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Thuber needlegrass</td>
<td>STTH2</td>
<td>10-15</td>
<td></td>
<td>X</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>2-10</td>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleleandrthd</td>
<td>STCO4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10-20</td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2-5</td>
<td>2-5</td>
<td>2-10</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPFO</td>
<td>5-20</td>
<td>10-20</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHA</td>
<td>2-5</td>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2-5</td>
<td>2-8</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>25-35</td>
<td>5-15</td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td></td>
<td></td>
<td>1-5</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopage</td>
<td>GRSF</td>
<td></td>
<td></td>
<td>1-5</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td></td>
<td></td>
<td>1-5</td>
<td></td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Purple sage</td>
<td>SADO2C</td>
<td></td>
<td></td>
<td>T-5</td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTW*</td>
<td>10-25</td>
<td></td>
<td></td>
<td>15-20</td>
<td>30-35</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ART2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHVI8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30-40</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-35</td>
<td>2-4</td>
<td></td>
<td>5-15</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 024X03ON 025X025N 025X059N 028B01ON 024X02ON 024X02ON
Woodland site symbol:
Potential production (lb/acre):
Favorable years: 500 200 500 800 700 700
Normal years: 350 150 350 600 450 450
Unfavorable years: 250 100 200 400 300 300
2683--Tessfive-Genaw-Orovada association

[The letter "t" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tessfive</td>
<td>Genaw</td>
</tr>
<tr>
<td>Thurbet needlegrass</td>
<td>STTH2</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squarreltail</td>
<td>SINY</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-20</td>
<td>---</td>
</tr>
<tr>
<td>Globosemadow</td>
<td>SPHAE</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>25-35</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVI5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>FUTR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Purple sage</td>
<td>SADOC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbrush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-35</td>
<td>5-15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X03ON</th>
<th>028B010N</th>
<th>028B010N</th>
<th>028B011N</th>
<th>025X025N</th>
<th>028B017N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>800</td>
<td>800</td>
<td>950</td>
<td>200</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>600</td>
<td>600</td>
<td>700</td>
<td>150</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>100</td>
<td>250</td>
</tr>
</tbody>
</table>
### 2684--Tessfive-Perlor-Orovada association

[The letter 'T' means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tessfive</td>
<td>Perlor</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td>10-15 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>2-10 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SINY</td>
<td>--- 5-15 5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>--- 2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>--- 1-3</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-20 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>2-5 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>--- 2-8</td>
<td>2-5</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>25-35 ---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>--- 30-40</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>--- 20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>--- 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5</td>
<td>--- 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARPM*</td>
<td>--- 15-20</td>
<td>10-25</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>--- 1-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>--- T-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Purple sage</td>
<td>SADOC2</td>
<td>---</td>
<td>---</td>
<td>T-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-35 2-5</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

### Range site symbol

- **O24X03ON**
- **O24X002N**
- **O28B01ON**
- **O25X025N**
- **O28B010N**
- **O28B010N**

**Potential production (lb/acre):**

<table>
<thead>
<tr>
<th></th>
<th>O24X03ON</th>
<th>O24X002N</th>
<th>O28B01ON</th>
<th>O25X025N</th>
<th>O28B010N</th>
<th>O28B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>700</td>
<td>800</td>
<td>200</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>450</td>
<td>600</td>
<td>150</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>300</td>
<td>400</td>
<td>100</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>
2690--Itca Variant=Reluctan=Handy association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Itca Variant</td>
<td>Reluctan</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>X</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>X</td>
<td>2-10</td>
<td>15-25</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>X</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
<td>20-40</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
<td>1-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
<td>1-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALS</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIQ</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
<td>10-15</td>
<td>X</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>X</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>X</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
<td>0-10</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUGS</td>
<td>X</td>
<td>---</td>
<td>X</td>
</tr>
</tbody>
</table>

Range site symbol
--- 024X021N  025X014N  ---  024X018N  024X021N
Woodland site symbol
025X062N  ---  ---  025X062N  ---  ---

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024X021N</th>
<th>025X014N</th>
<th>024X018N</th>
<th>024X021N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>1,400</td>
<td>1,000</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>700</td>
<td>1,400</td>
<td>1,000</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>1,000</td>
<td>800</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>1,000</td>
<td>800</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>200</td>
<td>700</td>
<td>600</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>300</td>
<td>700</td>
<td>600</td>
<td>300</td>
</tr>
</tbody>
</table>
2730--Pula-Spike-Buffaran association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FFGG</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPPF</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRH*</td>
<td>15-20</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Pouring saltbush</td>
<td>ATCA2</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSFP5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol:
- O28B010N
- O24X045N
- O28B010N
- O24X030N
- O28B003N
- O28B016N

Potential production (lb/acre):
- **Favorable years**: 800 350 800 500 2,600 500
- **Normal years**: 600 200 600 350 1,250 250
- **Unfavorable years**: 400 100 400 250 800 150
2731--Pula-Spike association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Pula</th>
<th>Spike</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
<td>20-30</td>
<td>15-30</td>
<td>5-15</td>
<td>15-30</td>
<td>20-30</td>
<td>5-15</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td></td>
<td>10-20</td>
<td></td>
<td>1-3</td>
<td></td>
<td>10-20</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
<td>5-10</td>
<td></td>
<td>5-15</td>
<td></td>
<td>5-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
<td>2-5</td>
<td></td>
<td>2-5</td>
<td></td>
<td>2-5</td>
<td>2-10</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td></td>
<td>5-10</td>
<td></td>
<td>5-10</td>
<td></td>
<td>10-20</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td></td>
<td>5-15</td>
<td></td>
<td>5-15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td></td>
<td>2-4</td>
<td></td>
<td>2-4</td>
<td></td>
<td>1-2</td>
<td></td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
<td>2-5</td>
<td></td>
<td>2-8</td>
<td></td>
<td>2-5</td>
<td></td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td></td>
<td>2-5</td>
<td></td>
<td>2-5</td>
<td></td>
<td>2-5</td>
<td></td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td></td>
<td>2-5</td>
<td></td>
<td>2-5</td>
<td></td>
<td>2-5</td>
<td></td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>5-15</td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td>2-5</td>
<td>30-40</td>
<td>2-5</td>
<td>2-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td></td>
<td>2-5</td>
<td></td>
<td>2-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>5-15</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
<td>5-15</td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol 028B01ON 024X045N 024X002N 024X045N 028B01ON 024X020N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>028B01ON</th>
<th>024X045N</th>
<th>024X002N</th>
<th>024X045N</th>
<th>028B01ON</th>
<th>024X020N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>350</td>
<td>700</td>
<td>350</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>200</td>
<td>450</td>
<td>200</td>
<td>600</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>100</td>
<td>300</td>
<td>100</td>
<td>400</td>
<td>300</td>
</tr>
</tbody>
</table>
2740--Spike-Desatoya Variant-Grassval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Spike</td>
<td>Desatoya Variant</td>
<td>Grassval</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>15-30</td>
<td>10-15</td>
<td>10-15</td>
<td>20-30</td>
<td>5-15</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>5-10</td>
<td>10-15</td>
<td>10-15</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>2-10</td>
<td>2-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>2-10</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-15</td>
<td>5-20</td>
<td>5-20</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>2-4</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-30</td>
<td>---</td>
<td>---</td>
<td>15-20</td>
<td>30-35</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>25-35</td>
<td>25-35</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>5-35</td>
<td>5-35</td>
<td>5-15</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol | O24X045N | O24X030N | O24X030N | O28B010N | O24X020N
Potential production (lb/acre):
Favorable years  | 350  | 500  | 500  | 800  | 700  |
Normal years     | 200  | 350  | 350  | 600  | 450  |
Unfavorable years| 100  | 250  | 250  | 400  | 300  |
2771—Kram-Hopeka-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kram</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>X</td>
</tr>
<tr>
<td>Thourber needlegrass</td>
<td>STTH2</td>
<td>X</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>X</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>X</td>
</tr>
<tr>
<td>Tapeript hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>X</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARABN</td>
<td>X</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>X</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>X</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUGS</td>
<td>X</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>---</th>
<th>---</th>
<th>None</th>
<th>024X021N</th>
<th>024X030N</th>
<th>025X003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland site symbol</td>
<td>025X063N</td>
<td>025Z063N</td>
<td>None</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>Favorable years</th>
<th>Normal years</th>
<th>Unfavorable years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>400</td>
<td>275</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>275</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>1,400</td>
<td>1,000</td>
<td>700</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>350</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>2,500</td>
<td>1,900</td>
<td>1,200</td>
</tr>
</tbody>
</table>
### 2780--Desatoya-Tenabo-Pineval association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Desatoya</th>
<th>Tenabo</th>
<th>Pineval</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>10-40</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>5-10</td>
<td>10-20</td>
<td>10-20</td>
<td>5-10</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>2-5</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-10</td>
<td>5-10</td>
<td>2-5</td>
<td>2-5</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>5-10</td>
<td>5-10</td>
<td>2-5</td>
<td>2-5</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>5-10</td>
<td>30-40</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Pouring saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARPERN*</td>
<td>---</td>
<td>---</td>
<td>15-20</td>
<td>15-20</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>027X032N</th>
<th>028B017N</th>
<th>028B010N</th>
<th>028B010N</th>
<th>028B011N</th>
<th>028B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>600</td>
<td>700</td>
<td>800</td>
<td>800</td>
<td>950</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>400</td>
<td>500</td>
<td>600</td>
<td>600</td>
<td>700</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>200</td>
<td>250</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>
2781--Desatoya-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Desatoya</td>
<td>Orovada</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>10-40</td>
<td>***</td>
</tr>
<tr>
<td>Thrutner needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
<td>***</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>***</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>***</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>***</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>***</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPPG</td>
<td>5-10</td>
<td>***</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPPF</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARABN</td>
<td>20-30</td>
<td>***</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>5-10</td>
<td>***</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>***</td>
<td>15-20</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARBP5</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>O27X032N</th>
<th>2B8010N</th>
<th>O28B010N</th>
<th>O28B017N</th>
<th>O27X032N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>600</td>
<td>800</td>
<td>800</td>
<td>700</td>
<td>600</td>
</tr>
<tr>
<td>Normal years</td>
<td>400</td>
<td>600</td>
<td>600</td>
<td>500</td>
<td>400</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>200</td>
<td>400</td>
<td>400</td>
<td>250</td>
<td>200</td>
</tr>
</tbody>
</table>
2782--Desatoya-Pineval-Grassval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>10-15</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>2-10</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SINY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-20</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>25-35</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSOS</td>
<td>5-35</td>
</tr>
</tbody>
</table>

Range site symbol
- 024X030N
- 028B010N
- 028B011N
- 024X030N
- 028B010N
- 028B010N

Potential production (lb/acre):
- Favorable years: 500, 800, 950, 500, 800, 800
- Normal years: 350, 600, 700, 350, 600, 600
- Unfavorable years: 250, 400, 400, 250, 400, 400
### 2783--Desatoya-Spike association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
<td>Desatoya, steep</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>10-15</td>
<td>5-10</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Needleleafthread</td>
<td>STCO4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>POHE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGWM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGE</td>
<td>5-20</td>
<td>5-15</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>2-5</td>
<td>2-4</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPFF</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>25-35</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTR*</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-35</td>
<td>2-5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X03ON</th>
<th>024X045N</th>
<th>024X030N</th>
<th>028B01ON</th>
<th>028B003N</th>
<th>028B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td>028B01ON</td>
<td>028B003N</td>
<td>028B010N</td>
</tr>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>350</td>
<td>500</td>
<td>800</td>
<td>2,600</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>200</td>
<td>350</td>
<td>600</td>
<td>1,250</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>100</td>
<td>250</td>
<td>400</td>
<td>800</td>
<td>400</td>
</tr>
</tbody>
</table>
2791—Old Camp-Colbar-Rock outcrop association

[The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td></td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSF</td>
<td></td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCT2</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCD4</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTWH*</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
</tr>
<tr>
<td>Shadecale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUHA5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
</tr>
</tbody>
</table>

Range site symbol          

<table>
<thead>
<tr>
<th></th>
<th>024X005N</th>
<th>024X005N</th>
<th>None</th>
<th>024X028N</th>
<th>024X002N</th>
<th>024X020N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>---</td>
<td>1,000</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>---</td>
<td>700</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>---</td>
<td>500</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
2792--Old Camp-Allor-Puett association

[The letter "T" means trace. An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Old Camp</td>
<td>Allor</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td></td>
<td>20-30</td>
<td>5-15</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td></td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SISH</td>
<td></td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC2</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PGG</td>
<td></td>
<td>5-15</td>
<td>5-10</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td></td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTBW</td>
<td></td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
<td>5-15</td>
<td>10-20</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td></td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Purple sage</td>
<td>SADOC2</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ART2</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Current</td>
<td>RIBES</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>FINO</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

| Range site symbol       | 027X007N | 027X008N | 025X025N | ---    | 027X008N | 027X032N |
| Woodland site symbol    | ---      | ---      | ---      | 025X062N | ---      | ---      |

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>Favorable years</th>
<th>Normal years</th>
<th>Unfavorable years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
<td>450</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>700</td>
<td>500</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>150</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>350</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>700</td>
<td>500</td>
<td>300</td>
</tr>
</tbody>
</table>
**2793—Old Camp-Laped association**

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Old Camp</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>20-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Needleleathread</td>
<td>STCO4</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSF3</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>---</td>
</tr>
<tr>
<td>Hawksbeard</td>
<td>CREPI</td>
<td>---</td>
</tr>
<tr>
<td>Globelemallow</td>
<td>SPHEAE</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHV1P</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EILA5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
</tr>
</tbody>
</table>

**Range site symbol:**

<table>
<thead>
<tr>
<th>O24X005N</th>
<th>O24X002N</th>
<th>O24X026N</th>
<th>O24X005N</th>
<th>O24X020N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>700</td>
<td>400</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>450</td>
<td>300</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>300</td>
<td>200</td>
<td>400</td>
</tr>
</tbody>
</table>
2797--Old Camp-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
<td>Old Camp, steep</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td></td>
<td>5-10</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SITHY</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>FOSE</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALS4</td>
<td></td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
<td>2-4</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPF4</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
<td>2-10</td>
</tr>
</tbody>
</table>

Range site symbol: O24X005N O24X005N O24X005N O25X014N O24X030N O24X002N

Potential production (lb/acre):
- Favorable years: 800 800 800 1,000 500 700
- Normal years: 600 600 600 800 350 450
- Unfavorable years: 400 400 400 600 250 300
2798—Old Camp-Atlow-Osoll association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td></td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
</tr>
<tr>
<td>Bluegrass</td>
<td>PGA++</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
</tr>
<tr>
<td>Needleleavedthread</td>
<td>STCO4</td>
<td></td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td></td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td></td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPAE</td>
<td></td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td></td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td></td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td></td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARABN</td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUFA5</td>
<td></td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTBT*</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>024X005N</th>
<th>024X030N</th>
<th>024X002N</th>
<th>024X030N</th>
<th>024X045N</th>
<th>025X013N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>500</td>
<td>700</td>
<td>500</td>
<td>350</td>
<td>1,000</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>350</td>
<td>450</td>
<td>350</td>
<td>200</td>
<td>800</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>250</td>
<td>300</td>
<td>250</td>
<td>100</td>
<td>500</td>
<td>---</td>
</tr>
</tbody>
</table>
### 3001—Barrier-Kobeh association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Barrier</td>
<td>Kobeh</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-10</td>
<td>10-20</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCT2</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
<td>2-5</td>
<td>5-10</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>5-10</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>3-15</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>02BB011N</th>
<th>02BB012N</th>
<th>02BB011N</th>
<th>02BB011N</th>
<th>02BB012N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>950</td>
<td>800</td>
<td>950</td>
<td>950</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>700</td>
<td>600</td>
<td>700</td>
<td>700</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>250</td>
</tr>
</tbody>
</table>
### 3011--Defler-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Defler</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>15-25</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>30-45</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRN*</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTET*</td>
<td>---</td>
</tr>
<tr>
<td>Greene rabbitbrush</td>
<td>CHGRG6</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

**Range site symbol:**

O28B013N  O28B010N  O28B010N  O28B009N  O28B013N

**Potential production (lb/acre):**

<table>
<thead>
<tr>
<th></th>
<th>O28B013N</th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B009N</th>
<th>O28B013N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>550</td>
<td>600</td>
<td>600</td>
<td>400</td>
<td>550</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>400</td>
<td>400</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
3050--Novacan cobble loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Novacan</td>
<td>1</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>15-25</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-10</td>
<td>10-20</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARABN</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

- O28B011N
- O28B010N
- O28B011N
- O28B017W

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>O28B011N</th>
<th>O28B010N</th>
<th>O28B011N</th>
<th>O28B017W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>950</td>
<td>800</td>
<td>950</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>700</td>
<td>600</td>
<td>700</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>250</td>
</tr>
</tbody>
</table>
3071--Allor-Wieland association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Allor</td>
<td>Wieland</td>
<td>1</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Needlethread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O28B01ON</th>
<th>O28B01ON</th>
<th>O28B01ON</th>
<th>O28B003N</th>
<th>O28B01ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>2,600</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>1,250</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>800</td>
<td>400</td>
</tr>
</tbody>
</table>
3072--Allor-Orovada association, moderately sloping

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Allor</td>
<td>Orovada</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20–30</td>
<td>20–30</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5–10</td>
<td>5–10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2–5</td>
<td>2–5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTN2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCT2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>2–5</td>
<td>2–5</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>028B010N</th>
<th>028B010N</th>
<th>028B010N</th>
<th>028B010N</th>
<th>028B030N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>1,100</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>850</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>550</td>
</tr>
</tbody>
</table>
### 3073--Allor-Kelk association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>STHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>POINE3</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPPF</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O28B01ON</th>
<th>O28B01ON</th>
<th>O28B01ON</th>
<th>O28B003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>2,600</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>1,250</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>800</td>
</tr>
</tbody>
</table>
3074--Allor-Orovada association, nearly level

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Allor</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>S1HY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTBW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAT</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVF4</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTBT*</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol | O28B010N | O28B010N | O24X002N | O24X022N | O24X004N |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>700</td>
<td>800</td>
<td>500</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>450</td>
<td>600</td>
<td>350</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>300</td>
<td>350</td>
<td>200</td>
</tr>
</tbody>
</table>
### 3080--Zaidy-Ricert association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Zaidy</td>
<td>Ricert</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>15-25</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-10</td>
<td>1-3</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ECLI2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIBY</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFFG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFP</td>
<td>5-10</td>
<td>2-8</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td>20-30</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>30-40</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSMS</td>
<td>---</td>
<td>2-5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O28B011N</th>
<th>O24X002N</th>
<th>O28B016N</th>
<th>O28B010N</th>
<th>O28B016N</th>
<th>O28B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>950</td>
<td>700</td>
<td>500</td>
<td>800</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>700</td>
<td>450</td>
<td>250</td>
<td>600</td>
<td>250</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>300</td>
<td>150</td>
<td>400</td>
<td>150</td>
<td>400</td>
</tr>
</tbody>
</table>
3081--Zaidy-Allor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHEA</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFN</td>
<td>5-10</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5</td>
<td>5-10</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSF</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCC</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol          | 028B011N     | 028B010N   | 028B010N | 024X045N | 028B010N |
---                         | ---          | ---        | ---       | ---       | ---       |
Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>028B011N</th>
<th>028B010N</th>
<th>028B010N</th>
<th>024X045N</th>
<th>028B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>950</td>
<td>800</td>
<td>800</td>
<td>350</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>700</td>
<td>600</td>
<td>600</td>
<td>200</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>100</td>
<td>400</td>
</tr>
</tbody>
</table>
3091--Packer-Newlands association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td></td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SINY</td>
<td></td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>FOCU3</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>FOSC</td>
<td></td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td></td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>STLE4</td>
<td></td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEXI2</td>
<td></td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td></td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PGG</td>
<td></td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAFLO2</td>
<td></td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td></td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALS4</td>
<td></td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFF</td>
<td></td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td></td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td></td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td></td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td></td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMP</td>
<td></td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHVI8</td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol        | 024X016N  | 024X016N  | 028B029N  | 024X027N  | 024X016N  | None

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024X016N</th>
<th>024X016N</th>
<th>028B029N</th>
<th>024X027N</th>
<th>024X016N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>350</td>
<td>1,500</td>
<td>1,200</td>
<td>350</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>250</td>
<td>900</td>
<td>800</td>
<td>250</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>150</td>
<td>650</td>
<td>600</td>
<td>150</td>
<td>---</td>
</tr>
</tbody>
</table>
### 3092—Packer-Hapgood—Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Packer</td>
<td>Hapgood</td>
<td>Rock outcrop</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>10-20</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squillretail</td>
<td>SIHY</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSH</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>---</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGrTR</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEK12</td>
<td>---</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Bulbous oniongrass</td>
<td>MEDU</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>STLE4</td>
<td>---</td>
<td>---</td>
<td>60-70</td>
</tr>
<tr>
<td>Columbia needlegrass</td>
<td>STNE3</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCL2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Geranium</td>
<td>GERAN</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Groundsel</td>
<td>SENEC</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Tallcoup lupine</td>
<td>LUCA</td>
<td>---</td>
<td>---</td>
<td>20-40</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>5-15</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>5-15</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>1-5</td>
<td>5-10</td>
<td>1-5</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMHP</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Oceanspray</td>
<td>HOLOD</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Threetip sagebrush</td>
<td>ARTTR4</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Current</td>
<td>RIBES</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X016N</th>
<th>024X032N</th>
<th>None</th>
<th>024X016N</th>
<th>025X028N</th>
<th>024X034N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>2,200</td>
<td>---</td>
<td>350</td>
<td>1,000</td>
<td>1,600</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>1,700</td>
<td>---</td>
<td>250</td>
<td>800</td>
<td>1,300</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>1,200</td>
<td>---</td>
<td>150</td>
<td>500</td>
<td>800</td>
</tr>
</tbody>
</table>
3093--Packer-Layview-Hapgood association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Packer</td>
<td>Layview</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurbur needlegrass</td>
<td>STHI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPPG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRNC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPPF</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARBN</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>1-5</td>
<td>1-5</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ART1T</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ART2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSUU</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 024X016N
Woodland site symbol: None

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024X016N</th>
<th>024X016N</th>
<th>024X023N</th>
<th>028B024N</th>
<th>None</th>
<th>---</th>
<th>024X018N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>350</td>
<td>1,500</td>
<td>2,800</td>
<td>---</td>
<td>500</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>250</td>
<td>1,200</td>
<td>1,700</td>
<td>---</td>
<td>375</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>150</td>
<td>900</td>
<td>1,000</td>
<td>---</td>
<td>250</td>
<td>300</td>
</tr>
</tbody>
</table>
### 3094--Packer-Hapgood-Torro association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Packer</td>
<td>Hapgood</td>
<td>Torro</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>10-20</td>
<td>5-15</td>
<td>1-10</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIMY</td>
<td>5-10</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>---</td>
<td>10-15</td>
<td>2-15</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>5-10</td>
<td>20-50</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEX12</td>
<td>---</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Bulbous oniongrass</td>
<td>MEBU</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Thumer needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>STLE4</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPPG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Geranium</td>
<td>GERAN</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Groundsel</td>
<td>SENECE</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPPP</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAB8</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARBN</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>1-5</td>
<td>5-10</td>
<td>5-15</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X016N</th>
<th>024X032N</th>
<th>024X029N</th>
<th>028B029N</th>
<th>024X016N</th>
<th>None</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>2,200</td>
<td>1,500</td>
<td>1,500</td>
<td>350</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>1,700</td>
<td>1,000</td>
<td>900</td>
<td>250</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>1,200</td>
<td>800</td>
<td>650</td>
<td>150</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
### 3101—Hackwood-Newlands-Hapgood association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRC5</td>
<td>X</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>SYLE4</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEKI2</td>
<td>---</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>X</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Bulbous oniongrass</td>
<td>MEBJ</td>
<td>X</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Columbia needlegrass</td>
<td>SYNE3</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SRYH</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Fine bluegrass</td>
<td>FOSC</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>X</td>
</tr>
<tr>
<td>Geranium</td>
<td>GERAN</td>
<td>X</td>
</tr>
<tr>
<td>Groundsel</td>
<td>SNEC</td>
<td>---</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>X</td>
</tr>
<tr>
<td>Tallcup lupine</td>
<td>LUCA</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHILOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>X</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>X</td>
</tr>
<tr>
<td>Quaking aspen</td>
<td>POTR5</td>
<td>X</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Woodland site symbol</th>
<th>025X065N</th>
<th>028B029N</th>
<th>024X032N</th>
<th>025X028N</th>
<th>024X016N</th>
<th>None</th>
<th>None</th>
</tr>
</thead>
</table>

### Potential production (lb/acre):

- **Favorable years**: 800, 1,500, 2,200, 1,000, 350
- **Normal years**: 600, 900, 1,700, 800, 250
- **Unfavorable years**: 400, 650, 1,200, 500, 150
### 3111--Ninemile-Zoesta-Itca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ninemile</td>
<td>Zoesta</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-15</td>
<td>2-5</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Thumber needlegrass</td>
<td>STH2</td>
<td>2-5</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>2-5</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPF</td>
<td>10-15</td>
<td>5-10</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAB8</td>
<td>25-30</td>
<td>25-30</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRP*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARABN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
<td>10-15</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>02BB037N</th>
<th>02BB045N</th>
<th>None</th>
<th>02BB003N</th>
<th>02BB016N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland site symbol</td>
<td>---</td>
<td>---</td>
<td>025X061N</td>
<td>None</td>
<td>---</td>
</tr>
</tbody>
</table>

**Potential production (lb/acre):**

- **Favorable years:**
  - 700
  - 800
  - 500
- **Normal years:**
  - 500
  - 600
  - 375
- **Unfavorable years:**
  - 300
  - 400
  - 250

**Potential production (lb/acre):**

- 2,600
- 1,250
- 800
3120--Walti-Softscramble-Chad association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Walti</td>
<td>Softscramble</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-15</td>
<td>20-30</td>
<td>20-50</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td>2-5</td>
<td>2-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
<td>20-40</td>
<td>1-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>2-15</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>---</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PGG</td>
<td>10-15</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>1-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>1-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>10-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>25-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
<td>---</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>O28B037N</th>
<th>O24X021N</th>
<th>O24X029N</th>
<th>O28B038N</th>
<th>None</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>1,400</td>
<td>1,500</td>
<td>800</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>500</td>
<td>1,000</td>
<td>1,100</td>
<td>600</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>700</td>
<td>800</td>
<td>400</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
### 3121—Walti-Softscrabble-Bucan association

The letter "T" means trace. An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community.

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Walti</td>
<td>Softscrabble</td>
</tr>
<tr>
<td>T/C fescue</td>
<td>FEID</td>
<td>25-50</td>
<td>20-40</td>
<td>---</td>
</tr>
<tr>
<td>T/C bunch wheat grass</td>
<td>AGSP</td>
<td>15-30</td>
<td>20-30</td>
<td>40-60</td>
</tr>
<tr>
<td>C/P needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>C/P fescue</td>
<td>LEK12</td>
<td>2-10</td>
<td>2-15</td>
<td>2-5</td>
</tr>
<tr>
<td>T/C wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>T/C grass</td>
<td>POA++</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>T/C berm wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>C/P bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>C/P hairgrass</td>
<td>DECA5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C/P tine timothy</td>
<td>PHL2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C/P Carex</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C/P low barley</td>
<td>HOB2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>T/C perennial grasses</td>
<td>FPGG</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>C/P samroot</td>
<td>BALSA</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C/P shrimp hawks beard</td>
<td>CRAC2</td>
<td>1-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>T/C white balsamroot</td>
<td>BASA3</td>
<td>1-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>C/P ra clover</td>
<td>TWGD</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C/P puffoil</td>
<td>POTEN</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>T/C perennial forbs</td>
<td>PPF0</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>C/P sagebrush</td>
<td>ARAR8</td>
<td>10-20</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C/P glas rabbitbrush</td>
<td>CHV18</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C/P tain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
<td>T-5</td>
<td>---</td>
</tr>
<tr>
<td>C/P ring big sagebrush</td>
<td>ARTN*</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>C/P sm big sagebrush</td>
<td>ARTN*</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>C/P he rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>C/P alow</td>
<td>SAL1X</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C/P shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>T/C ring aspen</td>
<td>POTR5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Site symbol</th>
<th>024X027N</th>
<th>024X021N</th>
<th>024X028N</th>
<th>028BO24N</th>
<th>None</th>
<th>025X005N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Oral years</td>
<td>1,200</td>
<td>1,400</td>
<td>1,000</td>
<td>2,800</td>
<td>---</td>
<td>800</td>
</tr>
<tr>
<td>Mal years</td>
<td>800</td>
<td>1,000</td>
<td>700</td>
<td>1,700</td>
<td>---</td>
<td>600</td>
</tr>
<tr>
<td>Favorable years</td>
<td>600</td>
<td>700</td>
<td>500</td>
<td>1,000</td>
<td>---</td>
<td>400</td>
</tr>
</tbody>
</table>
### 3122--Walti-Sumine-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Walti</td>
<td>Sumine</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>25-50</td>
<td>1-10</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>15-30</td>
<td>20-50</td>
</tr>
<tr>
<td>Thurbert needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LERK2</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCC2</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>HRCA5</td>
<td>---</td>
<td>2-15</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALS4</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA2</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHV18</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARSB2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X027N</th>
<th>O24X029N</th>
<th>O24X021N</th>
<th>O24X016N</th>
<th>None</th>
<th>O28B024N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>1,200</td>
<td>1,500</td>
<td>1,400</td>
<td>350</td>
<td>---</td>
<td>2,800</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>800</td>
<td>1,100</td>
<td>1,000</td>
<td>250</td>
<td>---</td>
<td>1,700</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>600</td>
<td>800</td>
<td>700</td>
<td>150</td>
<td>---</td>
<td>1,000</td>
<td>---</td>
</tr>
</tbody>
</table>
### 3123—Walti-Softscrabble-Itca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>25-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>15-30</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEK12</td>
<td>2-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>---</td>
</tr>
<tr>
<td>Nodding brome</td>
<td>BRAN</td>
<td>---</td>
</tr>
<tr>
<td>Slender hairgrass</td>
<td>DEEL</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>PCUC3</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGS</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BLSA</td>
<td>2-5</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>NAPLO2</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>10-20</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHV8</td>
<td>2-5</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
</tr>
<tr>
<td>Woods rose</td>
<td>ROWO</td>
<td>---</td>
</tr>
<tr>
<td>Common chokecherry</td>
<td>PRVI</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol
- 024X027N
- 024X021N
- 028B025N
- 024X029N
- 024X016N

### Woodland site symbol
- 025X061N

### Potential production (lb/acre): Favorable years 1,200 1,400 500 1,700 1,500 350

### Potential production (lb/acre): Normal years 800 1,000 375 1,300 1,100 250

### Potential production (lb/acre): Unfavorable years 600 700 250 900 800 150
### 3125--Walti-Softscramble-Robson association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Walti</td>
<td>Softscramble</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-15</td>
<td>20-30</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>2-5</td>
<td>2-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
<td>20-40</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>2-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFFG</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>1-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>1-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>25-30</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O28B037N</th>
<th>O24X021N</th>
<th>O28B045N</th>
<th>O28B024N</th>
<th>O28B038N</th>
<th>None</th>
<th>None</th>
</tr>
</thead>
</table>

**Potential production (lb/acre):**

- **Favorable years:**
  - 700
  - 1,400
  - 800
  - 2,800
  - 800
  - ---

- **Normal years:**
  - 500
  - 1,000
  - 600
  - 1,700
  - 600
  - ---

- **Unfavorable years:**
  - 300
  - 700
  - 400
  - 1,000
  - 400
  - ---
### 3130--Itca-Clanalpine-Reluctan association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community.]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Itca</td>
<td>Clanalpine</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
<td>X</td>
<td>20-40</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
<td>X</td>
<td>20-30</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>X</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>2-15</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>FONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFOG</td>
<td>X</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
<td>X</td>
<td>1-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
<td>X</td>
<td>1-5</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>X</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARPTR2</td>
<td>X</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARPTR*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>X</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
<td>X</td>
<td>---</td>
</tr>
</tbody>
</table>

**Range site symbol**

<table>
<thead>
<tr>
<th></th>
<th>025X061N</th>
<th>025X061N</th>
<th>024X021N</th>
<th>024X018N</th>
<th>028B024N</th>
<th>024X031N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland site symbol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Potential production (lb/acre):**

- **Favorable years**: 500, 500, 1,400, 700, 2,800, 700
- **Normal years**: 375, 375, 1,000, 500, 1,700, 500
- **Unfavorable years**: 250, 250, 700, 300, 1,000, 300
3131--Itca-Ninemile-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Itca</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>OPHY</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squireltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Cushick bluegrass</td>
<td>FOCU3</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELI2</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>X</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>X</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRB*</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>X</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
</tr>
</tbody>
</table>

Range site symbol: 025X061N  O2BB037N  None  024X018N  02BB027N  02BB024N

Woodland site symbol: None

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>025X061N</th>
<th>O2BB037N</th>
<th>None</th>
<th>024X018N</th>
<th>02BB027N</th>
<th>02BB024N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>700</td>
<td>None</td>
<td>700</td>
<td>900</td>
<td>2,800</td>
</tr>
<tr>
<td>Normal years</td>
<td>375</td>
<td>500</td>
<td>None</td>
<td>500</td>
<td>600</td>
<td>1,700</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>300</td>
<td>None</td>
<td>300</td>
<td>300</td>
<td>1,000</td>
</tr>
</tbody>
</table>
### 3132--Itca-Softscrabble-Cleavage association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Itca</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>PQR++</td>
<td>X</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCL2</td>
<td>---</td>
</tr>
<tr>
<td>Thumber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEKI2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>X</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>X</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHVI8</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>X</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X021N</th>
<th>024X016N</th>
<th>024X027N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland site symbol</td>
<td>025X061N</td>
<td>025X062N</td>
<td>025X062N</td>
<td>None</td>
</tr>
</tbody>
</table>

### Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>Favorable years</th>
<th>Normal years</th>
<th>Unfavorable years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>500</td>
<td>375</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>1,400</td>
<td>1,000</td>
<td>700</td>
</tr>
<tr>
<td></td>
<td>350</td>
<td>250</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>350</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>1,200</td>
<td>800</td>
<td>600</td>
</tr>
</tbody>
</table>
3134--Itca-Clan Alpine-Torro association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Torro</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Itca</td>
<td>Clan Alpine</td>
<td></td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
<td>X</td>
<td>1-10</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
<td>X</td>
<td>20-50</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>---</td>
<td>---</td>
<td>2-15</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
<td>1-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEXI2</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Nodding brome</td>
<td>BRAN</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Slender hairgrass</td>
<td>DEEL</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
<td>X</td>
<td>2-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
<td>X</td>
<td>5-15</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAB8</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHVI8</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Woods rose</td>
<td>ROWO</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Common chokecherry</td>
<td>PRWI</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol
Woodland site symbol
Potential production (lb/acre):
Favorable years
Normal years
Unfavorable years
3135--Itca-Clanalpine-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
<td>Itca</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>PEID</td>
<td>X                                           X                                           ---</td>
<td>10-20</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X                                           X                                           ---</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>FOA++</td>
<td>X                                           X                                           ---</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---                                         ---                                         ---</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---                                         ---                                         ---</td>
<td>5-10</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---                                         ---                                         ---</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---                                         ---                                         ---</td>
<td>2-5</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---                                         ---                                         ---</td>
<td>2-5</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---                                         ---                                         ---</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STC04</td>
<td>---                                         ---                                         ---</td>
<td>5-15</td>
</tr>
<tr>
<td>Thuther needlegrass</td>
<td>SSTH2</td>
<td>---                                         ---                                         ---</td>
<td>10-20</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>X                                           X                                           ---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X                                           X                                           ---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X                                           X                                           ---</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAFLO2</td>
<td>---                                         ---                                         ---</td>
<td>2-5</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---                                         ---                                         ---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>X                                           X                                           ---</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X                                           X                                           ---</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---                                         ---                                         ---</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---                                         ---                                         ---</td>
<td>5-15</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVIA2</td>
<td>---                                         ---                                         ---</td>
<td>1-5</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---                                         ---                                         ---</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARS5P</td>
<td>---                                         ---                                         ---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>X                                           X                                           ---</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X                                           X                                           ---</td>
<td>---</td>
</tr>
</tbody>
</table>

| Range site symbol          | 025X061N   | 025X061N   | None       | 024X016N   | 028B016N   | 027X054N   |
| Woodland site symbol       | None       | None       | None       | None       | None       | None       |

Potential production (lb/acre):

- Favorable years: 500 500 350 500 1,000
- Normal years: 375 375 250 250 800
- Unfavorable years: 250 250 150 150 600
3136--Itca-Roca-Reluctan association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "MT" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community.]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Itca</td>
<td>Roca</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
<td>40-60</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>FOA++</td>
<td>X</td>
<td>2-10</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
<td>2-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRM*</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>T-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARERT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol
Woodland site symbol

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024XO28N</th>
<th>O24XO21N</th>
<th>O25X003N</th>
<th>O28B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unfavorable years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 3137--Itca-Reluctan-Walti association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community.]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Itca</td>
<td>Reluctan</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
<td>20-40</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
<td>20-30</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCT2</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LK122</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Mountain brone</td>
<td>BRCA5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
<td>1-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
<td>1-5</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPPF</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHV18</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARBRT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSXS</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>---</th>
<th>024X021N</th>
<th>024X027N</th>
<th>024X029N</th>
<th>None</th>
<th>024X016N</th>
<th>025X003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland site symbol</td>
<td>025X061N</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>None</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

**Potential production (lb/acre):**

- **Favorable years:**
  - 500
  - 1,400
  - 1,200
  - 1,500
  - 350
  - 2,500

- **Normal years:**
  - 375
  - 1,000
  - 800
  - 1,100
  - 250
  - 1,900

- **Unfavorable years:**
  - 250
  - 700
  - 600
  - 800
  - 150
  - 1,200
3140--Sodhouse-Tenabo-Desatoya Variant association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Sodhouse</th>
<th>Tenabo</th>
<th>Desatoya Variant</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-15</td>
<td>5-15</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORRY</td>
<td>5-15</td>
<td>5-15</td>
<td>10-15</td>
<td>20-30</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Needle蔺tread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
<td>10-20</td>
<td>1-3</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POG++</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPOG</td>
<td>---</td>
<td>---</td>
<td>5-20</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
<td>2-8</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
<td>30-40</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
<td>25-35</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRX*</td>
<td>---</td>
<td>---</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
<td>5-35</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol: 024X002N 024X002N 024X030N 028B010N 024X002N 024X030N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>024X002N</th>
<th>024X002N</th>
<th>024X030N</th>
<th>028B010N</th>
<th>024X002N</th>
<th>024X030N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>500</td>
<td>800</td>
<td>700</td>
<td>500</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>350</td>
<td>600</td>
<td>450</td>
<td>350</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>250</td>
<td>400</td>
<td>300</td>
<td>250</td>
</tr>
</tbody>
</table>
3151--Robson-Ninemile-Ravenswood association

X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community.

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Robson</td>
<td>Ninemile</td>
</tr>
<tr>
<td>river needlegrass</td>
<td>STTH2</td>
<td>5-15</td>
<td>2-5</td>
</tr>
<tr>
<td>brome grass</td>
<td>ORHY</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>west yellowryegrass</td>
<td>POSE</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>2-5</td>
<td>5-15</td>
</tr>
<tr>
<td>Texas shrubgrass</td>
<td>SIHY</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Puccoon</td>
<td>POSC</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>bromegrass</td>
<td>FEID</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>fescue grass</td>
<td>POA++</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>in wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>bluegrass</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Ponderosa bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Santa bluegrass</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Puffball</td>
<td>PFFG</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>*tip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>*leaf 10-15</td>
<td>BASA3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>*perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
<td>10-15</td>
</tr>
<tr>
<td>sagebrush</td>
<td>ARAR8</td>
<td>25-30</td>
<td>25-30</td>
</tr>
<tr>
<td>*sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>*tain 15-25</td>
<td>ARVA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>*serviceberry</td>
<td>ANUT</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>*slope 2-8</td>
<td>PUTR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>*big 5-10</td>
<td>ARTTR*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>*shrub 15-20</td>
<td>SSSS</td>
<td>10-15</td>
<td>10-20</td>
</tr>
<tr>
<td>*leaf 250</td>
<td>PIMO</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Site symbol
- 02B04SN
- 02B037N
- 025X061N
- None
- 02B027N
- 02B003N
- None

Net production (lb/acre):
- 800
- 700
- 500
- 900
- 2,600
- 600
- 2,250
- 400
- 300
- 250
- 300
- 800
### 3153--Robson-Locane-Softscrabble association

[Abundance of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Robson</td>
<td>Locane</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>15-20 5-10 20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td>15-20 20-50 2-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>5-10 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>5-8 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-8 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>PCUS3</td>
<td>5-8 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>--- 20-40</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>--- 2-15</td>
<td>30-50</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>--- ---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>FONE3</td>
<td>--- ---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPFG</td>
<td>--- ---</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-5 2-4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>1-3 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>1-3 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4 1-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>1-5 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFN</td>
<td>--- ---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>20-30 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>--- 15-20</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHV1P</td>
<td>--- 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny bospage</td>
<td>GSIP</td>
<td>--- 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>--- 5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>--- ---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>--- ---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>--- 2-10</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X018N</th>
<th>O24X005N</th>
<th>O24X021N</th>
<th>O28B024N</th>
<th>None</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>800</td>
<td>1,400</td>
<td>2,800</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>500</td>
<td>600</td>
<td>1,000</td>
<td>1,700</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>400</td>
<td>700</td>
<td>1,000</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
3154--Robson-Locane-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robson</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>15-20</td>
</tr>
<tr>
<td>Thurbur needlegrass</td>
<td>STW2</td>
<td>15-20</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STRE</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>5-8</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-8</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>5-8</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEKI2</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>FOA++</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPOG</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSIA</td>
<td>2-5</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ER1OOG</td>
<td>1-3</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>1-3</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFH</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>20-30</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRF*</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHVIS</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 024X018N  024X005N  None  025X003N  024X027N  ---
Woodland site symbol: ---  ---  None  ---  ---  025X061N

Potential production (lb/acre):
- Favorable years: 700  800  ---  2,500  1,200  500
- Normal years: 500  600  ---  1,900  800  375
- Unfavorable years: 300  400  ---  1,200  600  250
### 3155--Robson-Itca-Softscrabble association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soil name</td>
<td>Inclusion number--</td>
</tr>
<tr>
<td></td>
<td>Robson</td>
<td>Itca</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>15-20</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTN2</td>
<td>15-20</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>5-8</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-8</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>5-8</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-5</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>1-3</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>1-3</td>
</tr>
<tr>
<td>Tapertip hawkswort</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>20-30</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
</tr>
<tr>
<td>Current</td>
<td>RIBES</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSE</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Woodland site symbol</th>
<th>024X018N</th>
<th>024X021N</th>
<th>025X014N</th>
<th>None</th>
<th>028X024N</th>
<th>025X062N</th>
</tr>
</thead>
</table>

### Potential production (lb/acre):

- **Favorable years:**
  - 700
  - 500
  - 1,400
  - 1,000
  - ---
  - 2,800
  - 500

- **Normal years:**
  - 500
  - 375
  - 1,000
  - 800
  - ---
  - 1,700
  - 350

- **Unfavorable years:**
  - 300
  - 250
  - 700
  - 600
  - ---
  - 1,000
  - 200
3170--Teguro-Rubble land-Punchbowl association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Teguro Rubble land Punchbowl 1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X  ---  ---  ---  X  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>X  ---  ---  ---  X  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>X  ---  10-15 10-15  X  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>X  ---  ---  ---  X  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X  ---  ---  ---  X  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---  ---  10-15 10-15  ---  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bluegrass</td>
<td>PPA++</td>
<td>---  ---  2-10 2-10  ---  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---  ---  5-20 5-20  ---  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X  ---  ---  ---  X  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X  ---  ---  ---  X  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---  2-5  2-5  ---  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X  ---  ---  ---  X  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMFP</td>
<td>X  ---  ---  ---  X  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>X  ---  ---  ---  X  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---  ---  25-35 25-35  ---  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---  ---  5-35 5-35  ---  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X  ---  ---  ---  X  ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td>X  ---  ---  ---  X  ---</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol
Woodland site symbol
025X062N None 024X030N 024X030N 025X062N None

Potential production (lb/acre):  
Favorable years 500 500 500 500 500
Normal years 350 350 350 350
Unfavorable years 200 250 250 200
### 3181--Newlands-Packer-Hapgood association, moderately steep

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Newlands</td>
<td>Packer</td>
<td>Hapgood</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRC5</td>
<td>15-20</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>10-15</td>
<td>10-20</td>
<td>5-15</td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>STLE4</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEK12</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squireltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>---</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Bulbous oniongrass</td>
<td>MEBU</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRC5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPFG</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHILO</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Geranium</td>
<td>GERAN</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Groundsel</td>
<td>SENEC</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Horseemint</td>
<td>AGUR</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Columbine</td>
<td>AQUIL</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Meadow rue</td>
<td>THALI2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sweet cicely</td>
<td>OSMOR</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>10-20</td>
<td>1-5</td>
<td>5-10</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>5-10</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARRN</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Currant</td>
<td>PBES</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Quaking aspen</td>
<td>POTT5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O2BB029N</th>
<th>O24X016N</th>
<th>O24X032N</th>
<th>O24X016N</th>
<th>None</th>
<th>None</th>
<th>O25X065N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland site symbol</td>
<td>02BB029N</td>
<td>O24X016N</td>
<td>O24X032N</td>
<td>O24X016N</td>
<td>None</td>
<td>None</td>
<td>O25X065N</td>
</tr>
</tbody>
</table>

**Potential production (lb/acre):**

- **Favorable years:** 1,500 | 350 | 2,200 | 350 | 800
- **Normal years:** 900 | 250 | 1,700 | 250 | 600
- **Unfavorable years:** 650 | 150 | 1,200 | 150 | 400
3182--Newlands-Packer-Hapgood association, strongly sloping

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Newlands</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRC5</td>
<td>15-20</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>10-15</td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>STELE4</td>
<td>5-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEKI2</td>
<td>5-10</td>
</tr>
<tr>
<td>Weber ricegrass</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Bulbous oniongrass</td>
<td>MEBU</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Tufted hairgrass</td>
<td>DECA5</td>
<td>---</td>
</tr>
<tr>
<td>Alpine timothy</td>
<td>PHAL2</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
</tr>
<tr>
<td>Meadow barley</td>
<td>NOBR2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-15</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Geranium</td>
<td>GERAN</td>
<td>---</td>
</tr>
<tr>
<td>Groundsel</td>
<td>SENEC</td>
<td>---</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>---</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRHO</td>
<td>---</td>
</tr>
<tr>
<td>Cinquefoil</td>
<td>POTEN</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>10-20</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>5-10</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>5-10</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR6</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>---</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 028B029N 024X016N 024X032N None 024X016N 025X005N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>028B029N</th>
<th>024X016N</th>
<th>024X032N</th>
<th>None</th>
<th>024X016N</th>
<th>025X005N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>1,500</td>
<td>350</td>
<td>2,200</td>
<td>---</td>
<td>350</td>
<td>2,000</td>
</tr>
<tr>
<td>Normal years</td>
<td>900</td>
<td>250</td>
<td>1,700</td>
<td>---</td>
<td>250</td>
<td>1,700</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>650</td>
<td>150</td>
<td>1,200</td>
<td>---</td>
<td>150</td>
<td>1,000</td>
</tr>
</tbody>
</table>
### 3190--Softscrabble-Clanalpine-Walti association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Softscrabble</td>
<td>Clanalpine</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>20-40</td>
<td>X</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>20-30</td>
<td>X</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Thuber needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEKI2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>FONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Weber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIRY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCT3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>1-5</td>
<td>X</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>1-5</td>
<td>X</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHVI8</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Torrey quailbrush</td>
<td>ATTO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUGS</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

| Range site symbol          | 024X021N     | ---     | 024X027N     | ---     | 024X016N     | None |
| Woodland site symbol       | ---         | 025X061N | ---         | 025X027N | ---         | None |

### Potential production (lb/acre):

- **Favorable years**: 1,400, 500, 1,200, 500, 1,500, 350
- **Normal years**: 1,000, 375, 800, 350, 1,200, 250
- **Unfavorable years**: 700, 250, 600, 200, 800, 150
### 3192--Softscramble-Walti-Cleavage association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community.)

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Softscramble</td>
<td>Walti</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>20-40</td>
<td>25-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>20-30</td>
<td>15-30</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td>2-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEX12</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>EBCA5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPOG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>1-5</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>1-5</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPL02</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHV18</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARABN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Potential production (lb/acre):

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>Woodland site symbol</th>
<th>024X021N</th>
<th>024X027N</th>
<th>024X016N</th>
<th>025X061N</th>
<th>024X029N</th>
<th>None</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td></td>
<td>1,400</td>
<td>1,200</td>
<td>350</td>
<td>500</td>
<td>1,500</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Normal years</td>
<td></td>
<td>1,000</td>
<td>800</td>
<td>250</td>
<td>375</td>
<td>1,100</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td></td>
<td>700</td>
<td>600</td>
<td>150</td>
<td>250</td>
<td>800</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
3200--Dewar gravelly loam, 2 to 8 percent slopes

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soil name</td>
<td>Inclusion number--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTES*</td>
<td>15-20</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B010N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>
3210—Typic Argixerolls-Torrripsammentic Haploxerolls—Glean association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Typic Argixerolls</td>
<td>Torripsammentic Haploxerolls</td>
<td>Glean</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>20-40</td>
<td>X</td>
<td>30-60</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>20-30</td>
<td>X</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>2-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thumber needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>1-5</td>
<td>X</td>
<td>1-3</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>1-5</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>---</td>
<td>---</td>
<td>1-2</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>FUTR2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
<td>X</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 024X021N 024X023N 024X021N 025X014N
Woodland site symbol: 024X021N 025X061N

Potential production (lb/acre):
Favorable years:
1,400 500 1,500 1,400 1,000
Normal years:
1,000 375 1,200 1,000 800
Unfavorable years:
700 250 900 700 600
3231--Stingdorn-Hooplite association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SHY</td>
<td>2-5</td>
</tr>
<tr>
<td>Fine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Galleta</td>
<td>HJIA</td>
<td>---</td>
</tr>
<tr>
<td>Needlegrass</td>
<td>STIPA</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFFG</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EU L5</td>
<td>2-5</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVEB</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EFNE</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O28B017N</th>
<th>O28B017N</th>
<th>O28B016N</th>
<th>O29X022N</th>
<th>O28B016N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>500</td>
<td>300</td>
<td>500</td>
</tr>
<tr>
<td>Normal years</td>
<td>500</td>
<td>500</td>
<td>250</td>
<td>200</td>
<td>250</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>250</td>
<td>150</td>
<td>100</td>
<td>150</td>
</tr>
</tbody>
</table>
3251--Caphor-Tenabo-Spasprey association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-10</td>
</tr>
<tr>
<td>Scarlet globemallow</td>
<td>SPCO</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>028B017N</th>
<th>028B017N</th>
<th>028B010N</th>
<th>028B010N</th>
<th>028B052N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>700</td>
<td>800</td>
<td>800</td>
<td>600</td>
</tr>
<tr>
<td>Normal years</td>
<td>500</td>
<td>500</td>
<td>600</td>
<td>600</td>
<td>400</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>250</td>
<td>400</td>
<td>400</td>
<td>300</td>
</tr>
</tbody>
</table>
### 3252--Caphor-Batan-Unsel association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

#### Percentage composition and production (dry weight) of plants on major soils and inclusions

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Caphor</td>
<td>Batan</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SINY</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Galleta</td>
<td>Hlja</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>T-10</td>
<td>T-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>FFPP</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-50</td>
<td>30-50</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>15-30</td>
<td>15-30</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUED</td>
<td>2-15</td>
<td>2-15</td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVEB</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X003N</th>
<th>024X003N</th>
<th>029X017N</th>
<th>024X003N</th>
<th>024X006N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>600</td>
<td>600</td>
<td>350</td>
<td>600</td>
<td>1,500</td>
</tr>
<tr>
<td>Normal years</td>
<td>450</td>
<td>450</td>
<td>250</td>
<td>450</td>
<td>1,100</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>300</td>
<td>100</td>
<td>300</td>
<td>600</td>
</tr>
</tbody>
</table>
### 3253—Caphor association

[The letter "x" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Caphor</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandleaf thread</td>
<td>STCD4</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-10</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SFHAE</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>2-5</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUEA6</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>028B017N</th>
<th>024X003N</th>
<th>028B010N</th>
<th>024X014N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>600</td>
<td>800</td>
<td>400</td>
</tr>
<tr>
<td>Normal years</td>
<td>500</td>
<td>450</td>
<td>600</td>
<td>300</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>300</td>
<td>400</td>
<td>200</td>
</tr>
</tbody>
</table>
3270--Koyen fine sandy loam, 2 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galleta</td>
<td>HIJA</td>
<td>Koyen</td>
<td>10-25</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
<td>2-5</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td></td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td></td>
<td>4-10</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
<td>10-25</td>
</tr>
<tr>
<td>Bailey greasewood</td>
<td>SAVEB</td>
<td></td>
<td>5-15</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td>5-10</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUA5</td>
<td></td>
<td>5-10</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td></td>
<td>10-25</td>
</tr>
<tr>
<td>Burrobrush</td>
<td>HYMEN3</td>
<td></td>
<td>5-15</td>
</tr>
<tr>
<td>Littleleaf horsebrush</td>
<td>TEGL</td>
<td></td>
<td>5-10</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>10-20</td>
</tr>
</tbody>
</table>

Range site symbol          | 029X017N     | 029X041N  |
Potential production (lb/acre):
Favorable years            | 350          | 500       |
Normal years                | 250          | 300       |
Unfavorable years           | 100          | 100       |
3310--Spasprey-Allor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spasprey</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPDD</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PPFF</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GBSP</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol: 028B01ON 028B01ON 028B01ON 027X008N 024X004N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>028B01ON</th>
<th>028B01ON</th>
<th>028B01ON</th>
<th>027X008N</th>
<th>024X004N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>700</td>
<td>500</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>500</td>
<td>350</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>300</td>
<td>200</td>
</tr>
</tbody>
</table>
### 3312--Spayre-Buffaran-Orovada association

[Abundance of an aleternity indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Spayre</td>
<td>Buffaran</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSF</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARBRN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSF</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shradscale</td>
<td>ATOC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B010N</th>
<th>O28B011N</th>
<th>O28B011N</th>
<th>O24X045N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>950</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>700</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
### 3314-—Spasprey-Allor-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Spasprey</td>
<td>Allor</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
</tr>
</tbody>
</table>

**Range site symbol**: 028B01ON 028B01ON 028B01ON 028B01ON 028B01ON 024X002N

**Potential production (lb/acre):**

- Favorable years: 800 800 800 800 800 700
- Normal years: 600 600 600 600 600 450
- Unfavorable years: 400 400 400 400 400 300
### 3341--Halcan-Hatur-Rock outcrop association

[ Absence of an entry indicates that the named plant is not a key species in the potential native plant community ]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>10-20</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCI3</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Fine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
</tr>
<tr>
<td>Mountain bracken</td>
<td>BRCA5</td>
<td>---</td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>STLE4</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEXI2</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Basin willow</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPPG</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>2-5</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>2-5</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>5-15</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>1-5</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTKT*</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X016N</th>
<th>028B029N</th>
<th>None</th>
<th>24X042N</th>
<th>028B024N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>1,500</td>
<td>---</td>
<td>1,000</td>
<td>2,800</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>900</td>
<td>---</td>
<td>800</td>
<td>1,700</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>650</td>
<td>---</td>
<td>500</td>
<td>1,000</td>
</tr>
</tbody>
</table>
### 3342--Halcan-Hapgood-Granzan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Halcan</td>
<td>Hapgood</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>10-20</td>
<td>5-15</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>FOCU3</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEKI</td>
<td>---</td>
<td>2-15</td>
</tr>
<tr>
<td>Bulbous oniongrass</td>
<td>MENU</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>FONE3</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>STLE4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Columbia needlegrass</td>
<td>STNE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FGGG</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHILOX</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Geranium</td>
<td>GERAN</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Groundsel</td>
<td>SENE</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tallcup lupine</td>
<td>LUCA</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FFFF</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARRN</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>1-5</td>
<td>5-10</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Burker needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Intelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>O24X016N</th>
<th>O24X032N</th>
<th>O28B027N</th>
<th>O24X042N</th>
<th>None</th>
<th>O25X028N</th>
<th>None</th>
</tr>
</thead>
</table>

### Potential production (lb/acre):

- **Favorable years**: 350, 2,200, 900, 1,000, 1,000
- **Normal years**: 250, 1,700, 600, 800, 800
- **Unfavorable years**: 150, 1,200, 300, 500, 500
### 3411--Zoesta-Robson-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Zoesta</td>
<td>Robson</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>15-20</td>
<td>15-20</td>
<td>20-30</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>15-20</td>
<td>15-20</td>
<td>2-10</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>5-8</td>
<td>5-8</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-8</td>
<td>5-8</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>5-8</td>
<td>5-8</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
<td>20-40</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>LECI2</td>
<td>---</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEK12</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ER10G</td>
<td>1-3</td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>Phlox</td>
<td>1-3</td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTTB*</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHV18</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Range site symbol: 024X018N 024X018N 024X021N 028B024N 024X027N None 024X016N

Potential production (lb/acre):

- **Favorable years**: 700 700 1,400 2,800 1,200 --- 350
- **Normal years**: 500 500 1,000 1,700 800 --- 250
- **Unfavorable years**: 300 300 700 1,000 600 --- 150
### 3415--Zoesta-Handy association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Zoesta</td>
<td>Handy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>15-20</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15-20</td>
<td></td>
</tr>
<tr>
<td>Thurbur needlegrass</td>
<td>STTH2</td>
<td>15-20</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15-25</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15-25</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5-10</td>
<td></td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>5-8</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5-8</td>
<td></td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-8</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5-8</td>
<td></td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>5-8</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5-8</td>
<td></td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>POPNE3</td>
<td>---</td>
<td>2-10</td>
<td>5-15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>---</td>
<td>50-60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FGGG</td>
<td>---</td>
<td>10-15</td>
<td>15-20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>1-3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1-3</td>
<td></td>
</tr>
<tr>
<td>Phlox</td>
<td>PHOLX</td>
<td>1-3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1-3</td>
<td></td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>---</td>
<td>2-5</td>
<td>5-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20-30</td>
<td></td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
<td>0-10</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0-10</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTTR*</td>
<td>---</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2-5</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X018N</th>
<th>025X014N</th>
<th>025X014N</th>
<th>025X003N</th>
<th>024X018N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>700</td>
<td>1,000</td>
<td>1,000</td>
<td>2,500</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>500</td>
<td>800</td>
<td>800</td>
<td>1,900</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>300</td>
<td>600</td>
<td>600</td>
<td>1,200</td>
<td>300</td>
</tr>
</tbody>
</table>
3417—Zoesta-Roca-Softscrabble association

[The letter "**" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Percentage composition and production (dry weight) of plants on major soils and inclusions</td>
<td>Zoesta</td>
<td>Roca</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>15-20 40-60 20-30</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Tharber needlegrass</td>
<td>STTH2</td>
<td>15-20 5-10 2-10</td>
<td>---</td>
<td>15-25</td>
</tr>
<tr>
<td>Wehler ricegrass</td>
<td>STWE</td>
<td>5-10 --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>5-8 --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fine bluegrass</td>
<td>POSC</td>
<td>5-8 --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>5-8 --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA+</td>
<td>--- 2-10 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCT2</td>
<td>--- 2-5 2-15</td>
<td>30-50</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>--- 20-40</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>--- ---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>--- ---</td>
<td>5-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPPG</td>
<td>--- ---</td>
<td>5-15</td>
<td>10-15</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-5 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>1-3 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>1-3 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>--- 2-5 1-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>--- 2-5 1-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>--- ---</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>20-30 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTAR*</td>
<td>--- 5-10 5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARWA2</td>
<td>--- 5-5 5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTTR*</td>
<td>--- ---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>--- ---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>--- ---</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>--- ---</td>
<td>0-10</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>--- ---</td>
<td>5-10</td>
<td>5-10</td>
</tr>
</tbody>
</table>


Potential production (lb/acre):
Favorable years: 700 1,000 1,400 2,800 1,000 700
Normal years: 500 700 1,000 1,700 800 500
Unfavorable years: 300 500 700 1,000 600 300
3421--Belate-Softscrabble-Torro association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>25-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>15-30</td>
</tr>
<tr>
<td>Thumber needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEXI2</td>
<td>2-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRC05</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>STHY</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Tufted hairgrass</td>
<td>DECA5</td>
<td>---</td>
</tr>
<tr>
<td>Alpine timothy</td>
<td>PHAL2</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
</tr>
<tr>
<td>Meadow barley</td>
<td>HOB02</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-5</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRWO</td>
<td>---</td>
</tr>
<tr>
<td>Cinquefoil</td>
<td>POTEN</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARA08</td>
<td>10-20</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHV18</td>
<td>2-5</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>AARNN</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CIRNA2</td>
<td>---</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol | 024X027N | 024X021N | 024X029N | 024X016N | 028B024N | None | 025X005N
---|---|---|---|---|---|---|---
Potential production (lb/acre):
Favorable years | 1,200 | 1,400 | 1,500 | 350 | 2,800 | --- | 2,000
Normal years | 800 | 1,000 | 1,100 | 250 | 1,700 | --- | 1,700
Unfavorable years | 600 | 700 | 800 | 150 | 1,000 | --- | 1,000
### 3422--Belate-Robson-Torro association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Belate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>25-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>15-30</td>
</tr>
<tr>
<td>Thurbert needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEKI2</td>
<td>2-10</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STNE</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Tufted hairgrass</td>
<td>DECA5</td>
<td>---</td>
</tr>
<tr>
<td>Alpine timothy</td>
<td>PHAL2</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
</tr>
<tr>
<td>Meadow barley</td>
<td>NORH2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGR</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BLSA</td>
<td>2-5</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>EROG</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>FHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TBKO</td>
<td>---</td>
</tr>
<tr>
<td>Cinquefoil</td>
<td>POTEN</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPPF</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>10-20</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHV18</td>
<td>2-5</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARCA2</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTG*</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>O24X027N</th>
<th>O24X018N</th>
<th>O24X029N</th>
<th>O24X021N</th>
<th>None</th>
<th>O28B024N</th>
<th>O25X005N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>1,200</td>
<td>700</td>
<td>1,500</td>
<td>1,400</td>
<td>---</td>
<td>2,800</td>
</tr>
<tr>
<td>Normal years</td>
<td>800</td>
<td>500</td>
<td>1,100</td>
<td>1,000</td>
<td>---</td>
<td>1,700</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>600</td>
<td>300</td>
<td>800</td>
<td>700</td>
<td>---</td>
<td>1,000</td>
</tr>
</tbody>
</table>
### 3423--Belate-Cleavage-Softscrable association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Belate</td>
<td>Cleavage</td>
<td>Softscrable</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>25-50</td>
<td>10-20</td>
<td>20-40</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>15-30</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEK12</td>
<td>2-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squireltaill</td>
<td>SINY</td>
<td>---</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POIC3</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSG</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
<td>2-15</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>---</td>
<td>---</td>
<td>2-15</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tufted hairgrass</td>
<td>DECA5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Alpine timothy</td>
<td>PHAL2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Meadow barley</td>
<td>HOBR2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPFG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSAS</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPO2</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TPWO</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cinquefoil</td>
<td>POTEN</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>O24X027N</th>
<th>O24X016N</th>
<th>O24X021N</th>
<th>O24X029N</th>
<th>None</th>
<th>O28B024N</th>
<th>O25X005N</th>
</tr>
</thead>
</table>

### Potential production (lb/acre):

#### Favorable years

- Low sagebrush: 1,200
- Douglas rabbitbrush: 1,400
- Black sagebrush: 1,500
- Mountain big sagebrush: 2,800
- Basin big sagebrush: 1,700
- Rubber rabbitbrush: 1,700
- Willow: 1,000
- Other shrubs: 1,000

#### Normal years

- Low sagebrush: 800
- Douglas rabbitbrush: 1,000
- Black sagebrush: 1,100
- Mountain big sagebrush: 1,700
- Basin big sagebrush: 1,700
- Rubber rabbitbrush: 2-5
- Willow: 2-5
- Other shrubs: 2-5

#### Unfavorable years

- Low sagebrush: 600
- Douglas rabbitbrush: 700
- Black sagebrush: 800
- Mountain big sagebrush: 1,000
- Basin big sagebrush: 1,000
- Rubber rabbitbrush: 2-5
- Willow: 2-5
- Other shrubs: 2-5
### 3450--Reluctan-Robson-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>%...</td>
<td>%...</td>
<td>%...</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>5-8</td>
<td>2-5</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>5-8</td>
<td>2-5</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>5-8</td>
<td>2-5</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORNY</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPPG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>1-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>1-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>1-3</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FFFFF</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
<td>---</td>
<td>1-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARBR*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

**Range site symbol**: 024X021N, 024X018N, 024X016N, None, None, 02BB024N, 024X031N

**Potential production (lb/acre)**:
- **Favorable years**: 1,400, 700, 350, ---, ---, 2,800, 700
- **Normal years**: 1,000, 500, 250, ---, ---, 1,700, 500
- **Unfavorable years**: 700, 300, 150, ---, ---, 1,000, 300
3453--Reluctan-Locane-Itca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Reluctan</td>
<td>Locane</td>
</tr>
</tbody>
</table>

| Idaho fescue             | FEID         | 20-40     | ---     | X    | 20-40 | --- | --- | --- |
| Bluebunch wheatgrass    | AGSP         | 20-30     | 15-25   | X    | 20-30 | 15-20 | --- | --- |
| Basin wildrye           | ELCI2        | 2-15      | ---     | ---  | 2-15  | --- | 30-50 | --- |
| Thurber needlegrass     | STTH2        | 2-10      | 15-25   | ---  | 2-10  | 15-20 | --- | --- |
| Bluegrass               | POA++        | ---       | ---     | X    | ---   | --- | --- | --- |
| Webber ricegrass        | STWE         | ---       | ---     | ---  | ---   | 5-10 | --- | --- |
| Sandberg bluegrass      | POSE         | ---       | ---     | ---  | ---   | 5-8  | --- | --- |
| Pine bluegrass          | POSC         | ---       | ---     | ---  | ---   | 5-8  | --- | --- |
| Cusick bluegrass        | POCU3        | ---       | ---     | ---  | ---   | 5-8  | --- | --- |
| Western wheatgrass      | AGSM         | ---       | ---     | ---  | ---   | 5-10 | --- | --- |
| Nevada bluegrass        | PONE3        | ---       | ---     | ---  | ---   | 5-10 | --- | --- |
| Other perennial grasses | PPGG         | ---       | 10-20   | X    | ---   | --- | 5-15 | --- |
| Tapertip hawksbeard     | CRAC2        | 1-5       | 2-5     | X    | 1-5   | --- | --- | --- |
| Arrowleaf balsamroot    | BASA3        | 1-5       | 2-5     | X    | 1-5   | --- | --- | --- |
| Balsamroot              | BALSA        | ---       | ---     | ---  | ---   | 2-5  | --- | --- |
| Eriogonum               | ERIOG        | ---       | ---     | ---  | ---   | 1-3  | --- | --- |
| Phlox                   | PHLOX        | ---       | ---     | ---  | ---   | 1-3  | --- | --- |
| Other perennial forbs   | PFFF         | ---       | 2-10    | X    | ---   | --- | 5-10 | --- |
| Mountain big sagebrush  | ARVA2        | 5-15      | 5-10    | ---  | 5-15  | --- | --- | --- |
| Wyoming big sagebrush   | ARTRW*       | ---       | 5-10    | ---  | ---   | --- | --- | --- |
| Big sagebrush           | ARTR2        | ---       | ---     | X    | ---   | --- | --- | --- |
| Low sagebrush           | ARARB8       | ---       | ---     | ---  | 20-30 | --- | --- | --- |
| Basin big sagebrush     | ARTRT*       | ---       | ---     | ---  | ---   | 5-10 | --- | --- |
| Rubber rabbitbrush      | CHNA2        | ---       | ---     | ---  | ---   | 2-5  | --- | --- |
| Other shrubs            | SSSS         | ---       | 2-10    | X    | ---   | --- | 5-10 | --- |
| Singleleaf pinyon       | PIMO         | ---       | ---     | X    | ---   | --- | --- | --- |

Range site symbol | 024X021N | 024X035N | --- | 024X021N | 024X018N | 028B024N | None |
Woodland site symbol | --- | --- | 025X061N | --- | --- | --- | --- |

Potential production (lb/acre):

|                | 024X021N | 024X035N | --- | 024X021N | 024X018N | 028B024N | None |
Favorable years:         1,400 | 500 | 500 | 1,400 | 700 | 2,800 | --- |
Normal years:             1,000 | 400 | 375 | 1,000 | 500 | 1,700 | --- |
Unfavorable years:        700 | 250 | 250 | 700 | 300 | 1,000 | --- |
3455--Reluctan-Roca-Colbar association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td></td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>20-30</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>2-15</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>1-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>1-5</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td></td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td></td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td></td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td></td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
</tr>
<tr>
<td>Ephedra</td>
<td>EPHED</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
</tr>
</tbody>
</table>

Range site symbol: 024X021N 024X028N 024X005N None 024X021N 024X047N

Potential production (lb/acre):

- Favorable years: 1,400 1,000 800 --- 1,400 400
- Normal years: 1,000 700 600 --- 1,000 300
- Unfavorable years: 700 500 400 --- 700 150
# Lander County, Nevada, South Part

## 3457--Reluctan-Clanlpine-Roca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Idaboe fescue</td>
<td>FED</td>
<td>20-40</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>20-30</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>2-15</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA+</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Tapetip hawksbeard</td>
<td>CRAC2</td>
<td>1-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>1-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X021N</th>
<th>---</th>
<th>O24X028N</th>
<th>O24X031N</th>
<th>None</th>
<th>O25X014N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland site symbol</td>
<td>O24X028N</td>
<td>O25X061N</td>
<td>---</td>
<td>---</td>
<td>None</td>
<td>O25X014N</td>
</tr>
</tbody>
</table>

**Potential production (lb/acre):**

- **Favorable years:**
  - 1,400
  - 1,000
  - 700
- **Normal years:**
  - 1,000
  - 700
  - 500
- **Unfavorable years:**
  - 700
  - 500
  - 300
### 3461--Torro-Rubble land-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Torro</th>
<th>Rubble land</th>
<th>Cleavage</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>20-50</td>
<td>---</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>2-15</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>2-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>1-10</td>
<td>---</td>
<td>10-20</td>
<td>20-40</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>STLE4</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
<td>---</td>
<td>1-5</td>
<td>5-15</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Oceanspray</td>
<td>HOLOD</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Threetip sagebrush</td>
<td>ARTR4</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X029N</th>
<th>None</th>
<th>O24X016N</th>
<th>O24X021N</th>
<th>None</th>
<th>O24X034N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>1,500</td>
<td>---</td>
<td>350</td>
<td>1,400</td>
<td>---</td>
<td>1,600</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,100</td>
<td>---</td>
<td>250</td>
<td>1,000</td>
<td>---</td>
<td>1,200</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>800</td>
<td>---</td>
<td>150</td>
<td>700</td>
<td>---</td>
<td>800</td>
</tr>
</tbody>
</table>
### 3462--Torro-Relucan-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Torro</th>
<th>Relucan</th>
<th>Cleavage</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>20-50</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
<td>20-30 20-50</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>5-10</td>
<td>2-15</td>
<td>---</td>
<td>---</td>
<td>2-15 5-10 50-60</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>2-15</td>
<td>---</td>
<td>---</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Thurbur needlegrass</td>
<td>STTH2</td>
<td>2-5</td>
<td>2-10</td>
<td>---</td>
<td>2-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Bottleshrub squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>1-10</td>
<td>20-40</td>
<td>10-20</td>
<td>---</td>
<td>20-40 1-10</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPAG</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>15-20</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-5</td>
<td>1-5</td>
<td>---</td>
<td>1-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>2-5</td>
<td>1-5</td>
<td>---</td>
<td>1-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
<td>5-15</td>
<td>1-5</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARAR2N</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTET*</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
</tbody>
</table>

**Range site symbol**: O24X029N O24X021N O24X016N None O24X021N O24X029N O25X003N

**Potential production (lb/acre):**

- **Favorable years**: 1,500 1,400 350 --- 1,400 1,500 2,500
- **Normal years**: 1,100 1,000 250 --- 1,000 1,100 1,900
- **Unfavorable years**: 800 700 150 --- 700 800 1,200
3463--Torro-Clanalpine-Itca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Torro</td>
<td>Clanalpine</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>20-50</td>
<td>X</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>2-15</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>1-10</td>
<td>X</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPFF</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-5</td>
<td>X</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>2-5</td>
<td>X</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
<td>X</td>
</tr>
</tbody>
</table>

Range site symbol: 024X029N
Woodland site symbol: O25X061N
Potential production (lb/acre):
Favorable years: 1,500 500 500 800 1,000
Normal years: 1,100 375 375 600 700
Unfavorable years: 800 250 250 400 500
<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Torro</td>
<td>Itca</td>
<td>Softscarble</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>20-50</td>
<td>X</td>
<td>20-30</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>5-10</td>
<td>---</td>
<td>2-15</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>HRC5</td>
<td>2-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thuber needlegrass</td>
<td>STTH2</td>
<td>2-5</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>1-10</td>
<td>X</td>
<td>20-40</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>FOCU3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-5</td>
<td>X</td>
<td>1-5</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>2-5</td>
<td>X</td>
<td>1-5</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFFF</td>
<td>---</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTT*</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
<td>X</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 024X029N, 024X021N, 025X061N, 024X018N, 028B024N

Woodland site symbol: None

Potential production (lb/acre):
- Favorable years: 1,500, 500, 1,400, 700, 2,800
- Normal years: 1,100, 375, 1,000, 500, 1,700
- Unfavorable years: 800, 250, 700, 300, 1,000
3465--Torro-Clanalpine-Softscrabble association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Torro</th>
<th>Clanalpine</th>
<th>Softscrabble</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>20-50</td>
<td>X</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>2-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTN2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>1-10</td>
<td>X</td>
<td>50-65</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td>---</td>
<td>X</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-5</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>2-5</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>---</td>
<td>X</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-15</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>X</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
<td>X</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol
Woodland site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
</tr>
<tr>
<td>Normal years</td>
</tr>
<tr>
<td>Unfavorable years</td>
</tr>
</tbody>
</table>
## 3562--Locane-Coztur-Punchbowl association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locane</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BLSA</td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIG</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ATRSW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSW</td>
<td>2-5</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ATRW2</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAB6</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X005N</th>
<th>O25X014N</th>
<th>O28B016N</th>
<th>O25X014N</th>
<th>O24X018N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>1,000</td>
<td>500</td>
<td>1,000</td>
<td>700</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>800</td>
<td>250</td>
<td>800</td>
<td>500</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>600</td>
<td>150</td>
<td>600</td>
<td>300</td>
<td>---</td>
</tr>
</tbody>
</table>
3563--Locane-Muni association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th></th>
<th>Inclusion number--</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Locane</td>
<td>Muni</td>
<td>Locane, eroded</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STHH2</td>
<td>20-50</td>
<td>---</td>
<td>X</td>
<td>1-3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>---</td>
<td>X</td>
<td>1-3</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
<td>5-15</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>10-20</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>X</td>
<td>---</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>X</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
<td>---</td>
<td>X</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

| Balsamroot                        | BALSA        | 2-4   | ---   | ---               | ---    | ---   | ---   |
| Tapertip hawksbeard               | CRAC2        | 2-4   | ---   | X                 | ---    | ---   | ---   |
| Arrowleaf balsamroot              | BASA3        | ---   | ---   | X                 | ---    | ---   | ---   |
| Other perennial forbs             | PFFE         | ---   | 2-5   | ---               | 5-15   | ---   | ---   |
| Wyoming big sagebrush             | ARRTR*       | 15-20 | 15-20 | ---               | ---    | ---   | ---   |
| Downy rabbitbrush                 | CHVIP        | 2-5   | ---   | ---               | ---    | ---   | ---   |
| Spiny hopsage                     | GRSP         | 2-5   | ---   | ---               | ---    | 15-30 | ---   |
| Big sagebrush                     | ARTR2        | ---   | ---   | X                 | ---    | ---   | ---   |
| Snowberry                         | SYMPH        | ---   | ---   | X                 | ---    | ---   | ---   |
| Currant                           | RIBES        | ---   | ---   | X                 | ---    | ---   | ---   |
| Black sagebrush                   | ARABN        | ---   | ---   | 20-25             | ---    | ---   | ---   |
| Fourwing saltbrush                | ATCA2        | ---   | ---   | 2-5               | ---    | ---   | ---   |
| Bud sagebrush                     | ARSP5        | ---   | ---   | 2-5               | ---    | ---   | ---   |
| Basin big sagebrush               | ARTRT*       | ---   | ---   | ---               | ---    | 2-10  | ---   |
| Black greasewood                  | SAVE4        | ---   | ---   | ---               | ---    | 2-10  | ---   |
| Anderson peachbrush               | FRAN2        | ---   | ---   | ---               | ---    | 2-10  | ---   |
| Rubber rabbitbrush                | CHNA2        | ---   | ---   | ---               | 2-5    | ---   | ---   |
| Other shrubs                      | SSSS         | 2-10  | 5-15  | ---               | 10-20  | ---   | ---   |
| Singleleaf pinyon                 | PIMO         | ---   | ---   | X                 | ---    | ---   | ---   |
| Utah juniper                      | JUOS         | ---   | ---   | X                 | ---    | ---   | ---   |

Range site symbol 024X005N 028B010N --- 028B016N 024X041N None
Woodland site symbol --- --- 025X062N --- --- None
Potential production (lb/acre):
Favorable years 800 800 500 500 1,000 ---
Normal years 600 600 350 250 800 ---
Unfavorable years 400 400 200 150 600 ---
3625—Minat-Costur-Belate association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Minat</td>
<td>Costur</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td>20-50 15-25 2-10 15-25</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10 20-30 15-30 20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>--- 2-10 15-30 2-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>--- --- 25-50 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEK12</td>
<td>--- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>--- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>--- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFFG</td>
<td>10-15 10-15 10-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALS A</td>
<td>2-4 2-5 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4 2-5 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>2-5 2-5 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>2-5 2-5 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20 --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5 --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hop sage</td>
<td>GRSP</td>
<td>2-5 --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>10-15 10-15 10-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>0-10 0-10 0-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>10-20 10-20 10-20</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHVI8</td>
<td>2-5 2-5 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>AMRT*</td>
<td>--- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>--- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10 5-10 5-10</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X005N</th>
<th>025X014N</th>
<th>024X027N</th>
<th>025X014N</th>
<th>None</th>
<th>028B024N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>1,000</td>
<td>1,200</td>
<td>1,000</td>
<td>---</td>
<td>2,800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>---</td>
<td>1,700</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>---</td>
<td>1,000</td>
</tr>
</tbody>
</table>
### 3690--Izod-Koynik-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>Izod</td>
<td>10-15</td>
<td>2-5</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>Koynik</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>Rock outcrop</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSP3</td>
<td></td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td></td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>FOSC</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGQ</td>
<td></td>
<td>5-20</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPFHAE</td>
<td></td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FFFP</td>
<td></td>
<td>2-8</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td></td>
<td>25-35</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
<td>---</td>
<td>30-50</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td>---</td>
<td>15-30</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>5-35</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X030N</th>
<th>O24X025N</th>
<th>None</th>
<th>O24X005N</th>
<th>O28B016N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>250</td>
<td>---</td>
<td>800</td>
<td>500</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>150</td>
<td>---</td>
<td>600</td>
<td>250</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>75</td>
<td>---</td>
<td>400</td>
<td>150</td>
</tr>
</tbody>
</table>
3740--Kelk silt loam, saline

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kelk</td>
<td>1</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>5-20</td>
<td>50-60</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SINV*</td>
<td>2-5</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORNY</td>
<td>2-5</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM*</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
<td>1-3</td>
<td>---</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>2-4</td>
<td>---</td>
<td>2-8</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>---</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>20-30</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>5-15</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>5-15</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2*</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>30-40</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5*</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAT*</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Torrey quailbush</td>
<td>ATTO</td>
<td>---</td>
<td>---</td>
<td>30-50</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X022N</th>
<th>O24X006N</th>
<th>O24X022N</th>
<th>O24X015N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>1,500</td>
<td>700</td>
<td>1,500</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>1,100</td>
<td>450</td>
<td>1,200</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>350</td>
<td>600</td>
<td>300</td>
<td>800</td>
</tr>
</tbody>
</table>
### 3741--Kelk-Settlemeyer association

[The letter "™" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kelk</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>50-60</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>5-15</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Slender hairgrass</td>
<td>DEEL</td>
<td>---</td>
</tr>
<tr>
<td>Streambank wheatgrass</td>
<td>AGRI</td>
<td>---</td>
</tr>
<tr>
<td>Thickspike wheatgrass</td>
<td>AGDA</td>
<td>---</td>
</tr>
<tr>
<td>Rush</td>
<td>JUNCU</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGR</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>2-8</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>APRTT*</td>
<td>15-20</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>2-10</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Torrey quailbrush</td>
<td>ATTO</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Rud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td>---</td>
</tr>
<tr>
<td>Woods rose</td>
<td>ROWO</td>
<td>---</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>---</td>
</tr>
<tr>
<td>Common chokecherry</td>
<td>PRVI</td>
<td>---</td>
</tr>
<tr>
<td>Skunkbush sumac</td>
<td>RMTR</td>
<td>---</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 024X006N 028B003N 024X015N 024X003N 028B033N

Potential production (lb/acre):

- Favorable years: 1,500 2,600 1,500 600 1,600
- Normal years: 1,100 1,250 1,200 450 1,200
- Unfavorable years: 600 800 800 300 800
3742—Kelk–Ocala association

[The letter "T" means trace. Absence of an entry means that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kelk</td>
<td>1</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>50–60</td>
<td>40–60</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>5–15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPA1</td>
<td>15–30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>5–10</td>
<td>---</td>
<td>5–10</td>
</tr>
<tr>
<td>Bottlebrush squarreltail</td>
<td>SIHY</td>
<td>5–10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>10–10</td>
<td>15–25</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFP</td>
<td>2–8</td>
<td>2–8</td>
<td>T–5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTPT*</td>
<td>15–20</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>2–15</td>
<td>5–15</td>
<td>15–30</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>2–5</td>
<td>1–2</td>
<td>---</td>
</tr>
<tr>
<td>Alkali rabbitbrush</td>
<td>CHAL9</td>
<td>1–2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
<td>30–50</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td></td>
<td>5–15</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUAED</td>
<td></td>
<td>2–15</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 024X006N 024X007N 024X003N 024X011N 028B003N

Potential production (lb/acre):

- Favorable years: 1,500 1,900 600 500 2,600
- Normal years: 1,100 1,400 450 350 1,250
- Unfavorable years: 600 800 300 200 800
3840--Jung-Newpass association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Jung, moderately steep</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>10-40</td>
<td>---</td>
<td>10-40</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
<td>5-15</td>
<td>2-10</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>STHY</td>
<td>5-10</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
<td>20-30</td>
<td>20-30</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>10-20</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>10-20</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>5-10</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Red sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O27X032N</th>
<th>O27X008N</th>
<th>O27X032N</th>
<th>O24X002N</th>
<th>O27X008N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Potential production (lb/acre):

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>600</td>
<td>700</td>
<td>600</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>400</td>
<td>500</td>
<td>400</td>
<td>450</td>
<td>500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>200</td>
<td>300</td>
<td>200</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>
3841--Jung-Itca-Roca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
</tr>
<tr>
<td>Thurer needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCl2</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
</tr>
<tr>
<td>Taper tip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-25</td>
</tr>
<tr>
<td>Pouring saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
</tr>
<tr>
<td>Single leaf pinyon</td>
<td>PIMO</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol | O28B016N | O24X028N | O25X014N | O27X007N | None
Woodland site symbol | --- | O25X061N | --- | --- | --- | None

Potential production (lb/acre):
- Favorable years: 500, 500, 1,000, 1,000, 600
- Normal years: 250, 375, 700, 800, 450
- Unfavorable years: 150, 250, 500, 600, 300
### 3842--Jung-Hooplite association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-10</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>PFFP</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-25</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCG</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>O28B016N</th>
<th>O28B016N</th>
<th>O24X002N</th>
<th>None</th>
<th>O24X002N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>500</td>
<td>700</td>
<td>---</td>
<td>700</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>250</td>
<td>450</td>
<td>---</td>
<td>450</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>150</td>
<td>300</td>
<td>---</td>
<td>300</td>
</tr>
</tbody>
</table>
### 3843—Jung-Newpass-Teguro association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td></td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>2TTH2</td>
<td></td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORNY</td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td></td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td></td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td></td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>PEID</td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td></td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td></td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td></td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td></td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ABARN</td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTW*</td>
<td></td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td></td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td></td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td></td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMN</td>
<td></td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td></td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td></td>
</tr>
</tbody>
</table>

**Range site symbol**: O27X032N, O27X008N, O25X062N, O25X061N; **Woodland site symbol**: ---, ---, O25X061N; **Potential production (lb/acre)**:

- **Favorable years**: 600, 700, 500, 500, ---, 500
- **Normal years**: 400, 500, 350, 375, ---, 375
- **Unfavorable years**: 200, 300, 200, 250, ---, 250
### 3845--Jung-Stingdorn-Atlow association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Tharber needlegrass</td>
<td>STHN2</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-10</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-25</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
</tr>
<tr>
<td>Pud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSOS</td>
<td>10-20</td>
</tr>
</tbody>
</table>

**Range site symbol**: 02BB016N 024X002N 024X030N 024X005N 024X002N None None

**Potential production (lb/acre):**

- **Favorable years**: 500 700 500 800 700 --- ---
- **Normal years**: 250 450 350 600 450 --- ---
- **Unfavorable years**: 150 300 250 400 300 --- ---
### 3846--Jung-Atlow-McVegas association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Jung</td>
<td>Atlow</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15 10-15 5-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15 --- 5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5 --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3 --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>--- 10-15 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>--- 2-10 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>--- --- 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFFG</td>
<td>5-10 5-20 5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SFHAE</td>
<td>--- 2-5 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>--- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>--- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>5-15 --- 5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-25 25-35 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pouring saltbush</td>
<td>ATCA2</td>
<td>2-5 --- 2-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSPS</td>
<td>2-5 --- 5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>--- 30-40 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULAS</td>
<td>--- 2-5 ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTB*</td>
<td>--- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>--- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>--- --- ---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20 5-35 5-15</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol:

<table>
<thead>
<tr>
<th>O28B016N</th>
<th>O24X030N</th>
<th>O28B017N</th>
<th>None</th>
<th>O24X005N</th>
<th>O27X032N</th>
</tr>
</thead>
</table>
| Potential production (lb/acre):
Favorable years | 500 | 500 | 700 | --- | 800 | 600 |
Normal years | 250 | 350 | 500 | --- | 600 | 400 |
Unfavorable years | 150 | 250 | 250 | --- | 400 | 200 |
3847--Jung-Old Camp-Clanalpine association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Jung</td>
<td>Old Camp</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>FGA++</td>
<td>10-40</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>2-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>---</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-10</td>
<td>5-15</td>
<td>X</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>5-10</td>
<td>5-10</td>
<td>X</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>5-15</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
<td>5-10</td>
<td>X</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 027X032N  O27X007N  025X061N
Woodland site symbol: None  027X011N  027X028N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>Favorable years</th>
<th>Normal years</th>
<th>Unfavorable years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
<td>400</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>600</td>
<td>450</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>375</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>600</td>
<td>400</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>700</td>
<td>500</td>
<td>300</td>
</tr>
</tbody>
</table>
3848--Jung-McVegas-Enko association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>10-15</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>10-15</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>2-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>5-20</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>25-35</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>HULA5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTWH*</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O24X03ON</th>
<th>O24X002N</th>
<th>O28B01ON</th>
<th>O24X002N</th>
<th>O24X03ON</th>
<th>O28B01ON</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>700</td>
<td>800</td>
<td>700</td>
<td>500</td>
<td>800</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>450</td>
<td>600</td>
<td>450</td>
<td>350</td>
<td>600</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>300</td>
<td>400</td>
<td>300</td>
<td>250</td>
<td>400</td>
<td>---</td>
</tr>
</tbody>
</table>
3851--Decram-Hapgood association

[The letter "tm" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>10-20</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Fine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEXI2</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRC5</td>
<td>---</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>---</td>
</tr>
<tr>
<td>Bulbous oniongrass</td>
<td>MEBU</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPO2</td>
<td>2-5</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>2-5</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
</tr>
<tr>
<td>Geranium</td>
<td>GERAN</td>
<td>---</td>
</tr>
<tr>
<td>Groundsel</td>
<td>SINEC</td>
<td>---</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>5-15</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>1-5</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHV18</td>
<td>2-5</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTSW*</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol: 024X016N 024X027N 024X032N 024X029N None None 024X028N

Potential production (lb/acre):
- Favorable years: 350 1,200 2,200 1,500 --- --- 1,000
- Normal years: 250 800 1,700 1,100 --- --- 700
- Unfavorable years: 150 600 1,200 800 --- --- 500
3852--Decram-Hapgood-Chad association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>10-15</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>5-10</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>15-20</td>
</tr>
<tr>
<td>Letterman needlegrass</td>
<td>STYLE4</td>
<td>5-10</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEKI2</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>5-10</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Tufted hairgrass</td>
<td>DECA5</td>
<td>---</td>
</tr>
<tr>
<td>Alpine timothy</td>
<td>PHAL2</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
</tr>
<tr>
<td>Meadow barley</td>
<td>HODR2</td>
<td>---</td>
</tr>
<tr>
<td>Thumber needlegrass</td>
<td>STUM2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>10-15</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRBO</td>
<td>---</td>
</tr>
<tr>
<td>Cinquefoil</td>
<td>POTEN</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>5-10</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>5-15</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>10-20</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>5-10</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>5-10</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTRI2</td>
<td>---</td>
</tr>
<tr>
<td>Common chokecherry</td>
<td>PRVI</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRTP*</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHIWA2</td>
<td>---</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Range site symbol
028B038N 028B029N 028B027N 028B026N None 028B024N 025X005N

Potential production (lb/acre):
Favorable years 800 1,500 900 1,400 --- 2,800 2,000
Normal years 600 900 600 1,000 --- 1,700 1,700
Unfavorable years 400 650 300 700 --- 1,000 1,000
## 3861--Duco-Itca-Roca association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

### Percentage composition and production (dry weight) of plants on major soils and inclusions

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Duco</td>
<td>Itca</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSF</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>FOA++</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGWN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>FOME3</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPGG</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
<td>X</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Utah serviceberry</td>
<td>AMUT</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>X</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUCS</td>
<td>X</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Woodland site symbol</th>
<th>O25X062N</th>
<th>O25X061N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range site symbol</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

### Woodland site symbol

<table>
<thead>
<tr>
<th>O24X028N</th>
<th>None</th>
<th>O28B030N</th>
<th>O28B024N</th>
</tr>
</thead>
</table>

### Potential production (lb/acre):

<table>
<thead>
<tr>
<th>Favorable years</th>
<th>500</th>
<th>500</th>
<th>1,000</th>
<th>---</th>
<th>1,100</th>
<th>2,800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal years</td>
<td>350</td>
<td>375</td>
<td>700</td>
<td>---</td>
<td>850</td>
<td>1,700</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>200</td>
<td>250</td>
<td>500</td>
<td>---</td>
<td>550</td>
<td>1,000</td>
</tr>
</tbody>
</table>
### 3863—Duco-Clanpine-Jung association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Duco</td>
<td>Clanpine</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>FONE3</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>CRSB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>025X062N</th>
<th>025X061N</th>
<th>027X032N</th>
<th>None</th>
<th>027X008N</th>
<th>027X007N</th>
</tr>
</thead>
</table>

### Woodland site symbol

<table>
<thead>
<tr>
<th>Woodland site symbol</th>
<th>025X062N</th>
<th>025X061N</th>
<th>None</th>
<th>027X008N</th>
<th>027X007N</th>
</tr>
</thead>
</table>

### Potential production (lb/acre):

- **Favorable years**: 500  500  600  ---  700  600
- **Normal years**: 350  375  400  ---  500  450
- **Unfavorable years**: 200  250  200  ---  300  300
3881--Layview-Packer-Hapgood association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Layview</td>
<td>Packer</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCI8</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSI</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
<td>5-10</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORNY</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCA5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEC12</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bulbous oniongrass</td>
<td>MEBU</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPFG</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Geranium</td>
<td>GERAN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Groundsel</td>
<td>SENEC</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>---</td>
<td>10-15</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAR8</td>
<td>5-15</td>
<td>25-30</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>1-5</td>
<td>---</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSOS</td>
<td>---</td>
<td>10-20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>024X016N</th>
<th>028B037N</th>
<th>024X032N</th>
<th>024X016N</th>
<th>024X042N</th>
<th>None</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>350</td>
<td>700</td>
<td>2,200</td>
<td>350</td>
<td>1,000</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>500</td>
<td>1,700</td>
<td>250</td>
<td>800</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>300</td>
<td>1,200</td>
<td>150</td>
<td>500</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
### 3891--Labshaft-Hapgood-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Labshaft</td>
<td>Hapgood</td>
<td>Rock outcrop</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>5-15</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Columbia needlegrass</td>
<td>STCO3</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Western needlegrass</td>
<td>STCO2</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain brome</td>
<td>BRCAS</td>
<td>---</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Spike fescue</td>
<td>LEKI2</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bulbous oniongrass</td>
<td>MERU</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STNE</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIMY</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Cusick bluegrass</td>
<td>POCU3</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PP10G</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Geranium</td>
<td>GERN</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Groundsel</td>
<td>SENEC</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Lupine</td>
<td>LUPIN</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Goldenweed</td>
<td>HAPLO2</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPFF</td>
<td>10-15</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>1-5</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Curleaf mountainmahogany</td>
<td>CELE3</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>AMELA</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Low sagebrush</td>
<td>ARAB8</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>028B043N</th>
<th>024X032N</th>
<th>None</th>
<th>024X016N</th>
<th>024X032N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>1,000</td>
<td>2,200</td>
<td>---</td>
<td>350</td>
<td>2,200</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>800</td>
<td>1,700</td>
<td>---</td>
<td>250</td>
<td>1,700</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>600</td>
<td>1,200</td>
<td>---</td>
<td>150</td>
<td>1,200</td>
<td>---</td>
</tr>
</tbody>
</table>
3950--Hooplite-Jung-Izod association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. The letter "m" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soil name</td>
<td>Hooplite</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>10-15</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>10-15</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>F0A++</td>
<td>2-10</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPFG</td>
<td>5-20</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHEA</td>
<td>2-5</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>25-35</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHV1P</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRM*</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
</tr>
<tr>
<td>Purple sage</td>
<td>SADO2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-35</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Woodland site symbol</th>
<th>O24X030N</th>
<th>O24X030N</th>
<th>O24X030N</th>
<th>O25X063N</th>
<th>O24X005N</th>
<th>O25X025N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>400</td>
<td>800</td>
<td>200</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>275</td>
<td>600</td>
<td>150</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>150</td>
<td>400</td>
<td>100</td>
<td>---</td>
</tr>
</tbody>
</table>
### 3951--Hooplute-Old Camp-Puett association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hooplute</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>10-40</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTM2</td>
<td>2-10</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SINY</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>5-10</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BLSM</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FFFF</td>
<td>5-10</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-30</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>PUTR2</td>
<td>---</td>
</tr>
<tr>
<td>Purple sage</td>
<td>SADOC2</td>
<td>---</td>
</tr>
<tr>
<td>Nevada ephedra</td>
<td>EPNE</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
</tr>
</tbody>
</table>

**Range site symbol**: O27X032N O24X005N O25X025N O27X032N O27X008N O25X025N

**Potential production (lb/acre):**

- **Favorable years**: 600 800 200 600 700 200
- **Normal years**: 400 600 150 400 500 150
- **Unfavorable years**: 200 400 100 200 300 100
### 3952--Hoopleite-Stingdorn association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Hoopleite</th>
<th>Stingdorn</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
<td>5-15</td>
<td>---</td>
<td>15-25</td>
<td>---</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>5-15</td>
<td>1-3</td>
<td>1-3</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>1-3</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>STNY</td>
<td>---</td>
<td>5-15</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGO</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>FFFF</td>
<td>5-15</td>
<td>2-8</td>
<td>2-8</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>20-25</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>20-30</td>
<td>---</td>
</tr>
<tr>
<td>Pouring saltbush</td>
<td>ATCA2</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td>20-30</td>
<td>20-30</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>30-40</td>
<td>30-40</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EULA5</td>
<td>---</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Small rabbitbrush</td>
<td>CHVIS</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>10-20</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
<th>O28B016N</th>
<th>O24X002N</th>
<th>O24X002N</th>
<th>None</th>
<th>O28B011N</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>500</td>
<td>700</td>
<td>700</td>
<td>---</td>
<td>950</td>
<td>---</td>
</tr>
<tr>
<td>Normal years</td>
<td>250</td>
<td>450</td>
<td>450</td>
<td>---</td>
<td>700</td>
<td>---</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>150</td>
<td>300</td>
<td>300</td>
<td>---</td>
<td>400</td>
<td>---</td>
</tr>
</tbody>
</table>
### 3960--Pineal gravelly loam, 2 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pineal</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>5-20</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>20-30</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>5-15</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>5-15</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>20-30</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUL45</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>O28B01CN</th>
<th>O24X022N</th>
<th>O24X002N</th>
<th>O24X022N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>700</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>450</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>350</td>
<td>300</td>
<td>350</td>
</tr>
</tbody>
</table>
3961--Pineval-Orovada-Beoska association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pineval</td>
<td>Orovida</td>
<td>Beoska</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>---</td>
<td>1-3</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SINH</td>
<td>5-10</td>
<td>---</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Thurbler needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>20-50</td>
<td>2-5</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSF</td>
<td>---</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Webber ricegrass</td>
<td>STWE</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Desert needlegrass</td>
<td>STSF3</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Pine bluegrass</td>
<td>POSC</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhy</td>
<td>MURI</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALS</td>
<td>2-4</td>
<td>2-8</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
<td>2-8</td>
<td>---</td>
</tr>
<tr>
<td>Eriogonum</td>
<td>ERIOG</td>
<td>2-4</td>
<td>---</td>
<td>2-4</td>
</tr>
<tr>
<td>Hawksbeard</td>
<td>CREPI</td>
<td>2-4</td>
<td>---</td>
<td>2-4</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-4</td>
<td>2-8</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
<td>10-25</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GHSP</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>2-5</td>
<td>30-40</td>
<td>2-5</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>2-5</td>
<td>20-30</td>
<td>2-5</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUA5</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>O28B01N</th>
<th>O24X005N</th>
<th>O24X002N</th>
<th>O24X026N</th>
<th>O24X005N</th>
<th>O25X003N</th>
</tr>
</thead>
</table>
| Potential production (lb/acre):
| Favorable years  | 800     | 800      | 700      | 400      | 800      | 2,500    |
| Normal years     | 600     | 600      | 450      | 300      | 600      | 1,900    |
| Unfavorable years| 400     | 400      | 300      | 200      | 400      | 1,200    |
3964--Pineval-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pineval</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>FONE3</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
</tr>
<tr>
<td>Perennial forbs</td>
<td>FFFF</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>02BB010N</th>
<th>02BB010N</th>
<th>02BB010N</th>
<th>02BB010N</th>
<th>02BB003N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>2,600</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>1,250</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>800</td>
</tr>
</tbody>
</table>
3990--Settlemeyer fine sandy loam, drained, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Settlemeyer</td>
<td>1</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>30-50</td>
<td>50-60</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>2-5</td>
<td>5-15</td>
</tr>
<tr>
<td>Thurbur needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Wildrye</td>
<td>ELYMU</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPPG</td>
<td>15-25</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BLSA</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRMO</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>2-5</td>
<td>2-8</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>5-10</td>
<td>15-20</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRH*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSR</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Silver sagebrush</td>
<td>ARCA13</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th></th>
<th>028B003N</th>
<th>024X006N</th>
<th>024X005N</th>
<th>025X001N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>2,600</td>
<td>1,500</td>
<td>800</td>
<td>3,000</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,250</td>
<td>1,100</td>
<td>600</td>
<td>2,500</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>800</td>
<td>600</td>
<td>400</td>
<td>1,800</td>
</tr>
</tbody>
</table>
### 3991--SettlemeY-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Settlemeyer</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>30-50</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>2-5</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>2-5</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
</tr>
<tr>
<td>Thurbler needlegrass</td>
<td>STTM2</td>
<td>---</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>SPA1</td>
<td>---</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISPS2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>FPPG</td>
<td>15-25</td>
</tr>
<tr>
<td>Thelypody</td>
<td>THELY</td>
<td>---</td>
</tr>
<tr>
<td>Scarlet globemallow</td>
<td>SFCA</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>FPPP</td>
<td>2-5</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ATRT*</td>
<td>5-10</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ATRW*</td>
<td>15-20</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSF</td>
<td>---</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSF5</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
<tr>
<td>Fourwing saltbrush</td>
<td>ATCA2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-10</td>
</tr>
</tbody>
</table>

**Range site symbol**

<table>
<thead>
<tr>
<th></th>
<th>O28B003N</th>
<th>O28B010N</th>
<th>O24X022N</th>
<th>O28B052N</th>
<th>O28B004N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>2,600</td>
<td>800</td>
<td>800</td>
<td>600</td>
<td>2,000</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,250</td>
<td>600</td>
<td>600</td>
<td>400</td>
<td>1,000</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>800</td>
<td>400</td>
<td>350</td>
<td>300</td>
<td>500</td>
</tr>
</tbody>
</table>
### 3992--Settllemeyer complex

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

#### Percentage composition and production (dry weight) of plants on major soils and inclusions

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Settllemeyer, drained</td>
<td>Settllemeyer, frequently flooded</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>50-60</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>5-15</td>
<td>5-10</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>2-10</td>
<td>2-10</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>1-5</td>
<td>---</td>
</tr>
<tr>
<td>Wildrye</td>
<td>ELYMU</td>
<td>30-60</td>
<td>---</td>
</tr>
<tr>
<td>Inland saltgrass</td>
<td>DISP52</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STH2</td>
<td>20-50</td>
<td>---</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPIG</td>
<td>15-20</td>
<td>5-15</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRWO</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Taper tip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFP</td>
<td>5-10</td>
<td>5-10</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARRT*</td>
<td>10-15</td>
<td>2-5</td>
</tr>
<tr>
<td>Killow</td>
<td>SALIX</td>
<td>5-10</td>
<td>---</td>
</tr>
<tr>
<td>Silver sagebrush</td>
<td>ARCA13</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHV1P</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>2-5</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-8</td>
</tr>
</tbody>
</table>

#### Range site symbol

<table>
<thead>
<tr>
<th>O25X003N</th>
<th>O25X001N</th>
<th>O24X005N</th>
<th>O24X006N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>2,500</td>
<td>3,000</td>
<td>800</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,900</td>
<td>2,500</td>
<td>600</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>1,200</td>
<td>1,800</td>
<td>400</td>
</tr>
</tbody>
</table>
4041--Hymas-Xine-Attella association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Hymas</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>X</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELC12</td>
<td>X</td>
</tr>
<tr>
<td>Thueber needlegrass</td>
<td>STTH2</td>
<td>X</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>X</td>
</tr>
<tr>
<td>Idaho fescue</td>
<td>FEID</td>
<td>X</td>
</tr>
<tr>
<td>Mountain brone</td>
<td>BRCA5</td>
<td>---</td>
</tr>
<tr>
<td>Bottlebrush squireltail</td>
<td>SIHY</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA+</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGEM</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPGG</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>X</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA 3</td>
<td>X</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>X</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td>X</td>
</tr>
<tr>
<td>Currant</td>
<td>RIBES</td>
<td>X</td>
</tr>
<tr>
<td>Mountain big sagebrush</td>
<td>ARVA2</td>
<td>---</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARARN</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARTRT*</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CNNA2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>---</td>
</tr>
<tr>
<td>Singleleaf pinyon</td>
<td>PIMO</td>
<td>X</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td>X</td>
</tr>
</tbody>
</table>

Range site symbol: --- 024X021N  ---  024X029N  024X031N  None  028B024N
Woodland site symbol: 025X062N  ---  025X062N  ---  025X062N  ---  None  028B024N

Potential production (lb/acre):

- Favorable years: 500 1,400 500 1,500 700  ---  2,800
- Normal years: 350 1,000 350 1,100 500  ---  1,700
- Unfavorable years: 200 700 200 800 300  ---  1,000
**Soil Survey**

### 4070—Genaw-Wieland-Grina association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Soil name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Genaw</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>20-50</td>
</tr>
<tr>
<td>Bluebunch wheatgrass</td>
<td>AGSP</td>
<td>5-10</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td>---</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>---</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>AGSM</td>
<td>---</td>
</tr>
<tr>
<td>Balsamroot</td>
<td>BALSA</td>
<td>2-4</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>2-4</td>
</tr>
<tr>
<td>Arrowleaf balsamroot</td>
<td>BASA3</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td>---</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARM5*</td>
<td>15-20</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>2-5</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>2-5</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
</tr>
<tr>
<td>Douglas rabbitbrush</td>
<td>CHVB8</td>
<td>---</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>ARMTR*</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
</tr>
<tr>
<td>Rubber rabbitbrush</td>
<td>CHNA2</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-10</td>
</tr>
<tr>
<td>Utah juniper</td>
<td>JUOS</td>
<td>---</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>O24X005N</th>
<th>O24X005N</th>
<th>O25X003N</th>
<th>O24X045N</th>
<th>O24X006N</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>800</td>
<td>500</td>
<td>2,500</td>
<td>350</td>
</tr>
</tbody>
</table>

Woodland site symbol

<table>
<thead>
<tr>
<th>O25X005N</th>
<th>025X003N</th>
<th>O25X059N</th>
<th>---</th>
<th>---</th>
<th>---</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>600</td>
<td>350</td>
<td>1,900</td>
<td>200</td>
<td>1,100</td>
</tr>
</tbody>
</table>

Potential production (lb/acre):

<table>
<thead>
<tr>
<th>Favorable years</th>
<th>Normal years</th>
<th>Unfavorable years</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>600</td>
<td>400</td>
</tr>
<tr>
<td>800</td>
<td>600</td>
<td>400</td>
</tr>
<tr>
<td>500</td>
<td>350</td>
<td>200</td>
</tr>
<tr>
<td>2,500</td>
<td>1,900</td>
<td>1,200</td>
</tr>
<tr>
<td>2,500</td>
<td>1,900</td>
<td>1,200</td>
</tr>
<tr>
<td>350</td>
<td>200</td>
<td>100</td>
</tr>
<tr>
<td>1,500</td>
<td>1,100</td>
<td>600</td>
</tr>
</tbody>
</table>
### 4072--Genaw-Orovada-Puett association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Genaw</th>
<th>Orovada</th>
<th>Puett</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>20-30</td>
<td>20-30</td>
<td>10-30</td>
<td>15-30</td>
<td>10-15</td>
<td>10-20</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>10-20</td>
<td>10-20</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>5-10</td>
<td>5-10</td>
<td>5-10</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-5</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-10</td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>POA++</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Thickspike wheatgrass</td>
<td>AGDA</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>2-10</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td>10-20</td>
<td>5-15</td>
<td>5-20</td>
<td>2-5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>---</td>
<td>---</td>
<td>2-4</td>
<td>2-5</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFPF</td>
<td>2-5</td>
<td>2-5</td>
<td>5-15</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>15-20</td>
<td>15-20</td>
<td>10-25</td>
<td>15-30</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Downy rabbitbrush</td>
<td>CHVIP</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1-5</td>
<td>2-5</td>
<td>T-5</td>
</tr>
<tr>
<td>Antelope bitterbrush</td>
<td>FUTR2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>5-15</td>
<td>---</td>
<td>25-35</td>
</tr>
<tr>
<td>Black sagebrush</td>
<td>ARABN</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>25-35</td>
<td>---</td>
</tr>
<tr>
<td>Purple sage</td>
<td>SADOC2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>T-5</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>---</td>
<td>2-5</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Big sagebrush</td>
<td>ARTR2</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>10-20</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>5-15</td>
<td>5-15</td>
<td>2-4</td>
<td>2-5</td>
<td>5-35</td>
<td>2-10</td>
</tr>
</tbody>
</table>

### Range site symbol

<table>
<thead>
<tr>
<th>Range site symbol</th>
<th>026B010N</th>
<th>026B010N</th>
<th>025X025N</th>
<th>024X045N</th>
<th>024X030N</th>
<th>024X017N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential production (lb/acre):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable years</td>
<td>800</td>
<td>800</td>
<td>200</td>
<td>350</td>
<td>500</td>
<td>900</td>
</tr>
<tr>
<td>Normal years</td>
<td>600</td>
<td>600</td>
<td>150</td>
<td>200</td>
<td>350</td>
<td>700</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>400</td>
<td>400</td>
<td>100</td>
<td>100</td>
<td>250</td>
<td>500</td>
</tr>
</tbody>
</table>
4073--Genaw-Broyles-Perlor association

[The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Genaw</td>
<td>Broyles</td>
</tr>
<tr>
<td>Thurber needlegrass</td>
<td>STTH2</td>
<td>10-20</td>
<td>---</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td>ORHY</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Bottlebrush squirreltail</td>
<td>SIHY</td>
<td>2-10</td>
<td>5-15</td>
</tr>
<tr>
<td>Sandberg bluegrass</td>
<td>POSE</td>
<td>2-10</td>
<td>2-5</td>
</tr>
<tr>
<td>Needleandthread</td>
<td>STCO4</td>
<td>1-3</td>
<td>1-3</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PPQG</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tapertip hawksbeard</td>
<td>CRAC2</td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Globemallow</td>
<td>SPHAE</td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Phlox</td>
<td>PHLOX</td>
<td>1-2</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PPPF</td>
<td>2-8</td>
<td>2-8</td>
</tr>
<tr>
<td>Wyoming big sagebrush</td>
<td>ARTRW*</td>
<td>30-35</td>
<td>---</td>
</tr>
<tr>
<td>Spiny hopsage</td>
<td>GRSP</td>
<td>5-15</td>
<td>2-5</td>
</tr>
<tr>
<td>Shadscale</td>
<td>ATCO</td>
<td>---</td>
<td>30-40</td>
</tr>
<tr>
<td>Bud sagebrush</td>
<td>ARSP5</td>
<td>---</td>
<td>20-30</td>
</tr>
<tr>
<td>Winterfat</td>
<td>EUA5</td>
<td>2-5</td>
<td>2-5</td>
</tr>
<tr>
<td>Black greasewood</td>
<td>SAVE4</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Seepweed</td>
<td>SUEAD</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td>2-5</td>
<td>2-5</td>
</tr>
</tbody>
</table>

Range site symbol

<table>
<thead>
<tr>
<th>Potential production (lb/acre):</th>
</tr>
</thead>
<tbody>
<tr>
<td>O24X020N</td>
</tr>
<tr>
<td>Favorable years</td>
</tr>
<tr>
<td>Normal years</td>
</tr>
<tr>
<td>Unfavorable years</td>
</tr>
</tbody>
</table>
4140--Welch loam, drained, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

<table>
<thead>
<tr>
<th>Common plant name</th>
<th>Plant symbol</th>
<th>Soil name</th>
<th>Percentage composition and production (dry weight) of plants on major soils and inclusions</th>
<th>Inclusion number--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Welch</strong></td>
<td>1</td>
</tr>
<tr>
<td>Basin wildrye</td>
<td>ELCI2</td>
<td></td>
<td>50-60</td>
<td>5-10</td>
</tr>
<tr>
<td>Nevada bluegrass</td>
<td>PONE3</td>
<td></td>
<td>5-15</td>
<td>---</td>
</tr>
<tr>
<td>Mat muhly</td>
<td>MURI</td>
<td></td>
<td>2-10</td>
<td>---</td>
</tr>
<tr>
<td>Sedge</td>
<td>CAREX</td>
<td></td>
<td>1-5</td>
<td>---</td>
</tr>
<tr>
<td>Slender wheatgrass</td>
<td>AGTR</td>
<td></td>
<td>---</td>
<td>1-10</td>
</tr>
<tr>
<td>Nodding brome</td>
<td>BRAN</td>
<td></td>
<td>---</td>
<td>1-10</td>
</tr>
<tr>
<td>Slender hairgrass</td>
<td>DEEL</td>
<td></td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Tufted hairgrass</td>
<td>DECA5</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Alpine timothy</td>
<td>PHAL2</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Meadow barley</td>
<td>MBR2</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial grasses</td>
<td>PFGG</td>
<td></td>
<td>15-20</td>
<td>5-10</td>
</tr>
<tr>
<td>Sierra clover</td>
<td>TRWO</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cinquefoil</td>
<td>POTEN</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other perennial forbs</td>
<td>PFFF</td>
<td></td>
<td>5-10</td>
<td>10-20</td>
</tr>
<tr>
<td>Basin big sagebrush</td>
<td>AFTRT*</td>
<td></td>
<td>10-15</td>
<td>---</td>
</tr>
<tr>
<td>Woods rose</td>
<td>ROWO</td>
<td></td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Common chokecherry</td>
<td>PRVI</td>
<td></td>
<td>---</td>
<td>5-10</td>
</tr>
<tr>
<td>Snowberry</td>
<td>SYMPH</td>
<td></td>
<td>---</td>
<td>2-5</td>
</tr>
<tr>
<td>Willow</td>
<td>SALIX</td>
<td></td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other shrubs</td>
<td>SSSS</td>
<td></td>
<td>2-5</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Range site symbol 025X003N 028B025N 025X005N

Potential production (lb/acre):

<table>
<thead>
<tr>
<th></th>
<th>025X003N</th>
<th>028B025N</th>
<th>025X005N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable years</td>
<td>2,500</td>
<td>1,700</td>
<td>2,000</td>
</tr>
<tr>
<td>Normal years</td>
<td>1,900</td>
<td>1,300</td>
<td>1,700</td>
</tr>
<tr>
<td>Unfavorable years</td>
<td>1,200</td>
<td>900</td>
<td>1,000</td>
</tr>
</tbody>
</table>
NRCS Accessibility Statement

The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@fte.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.