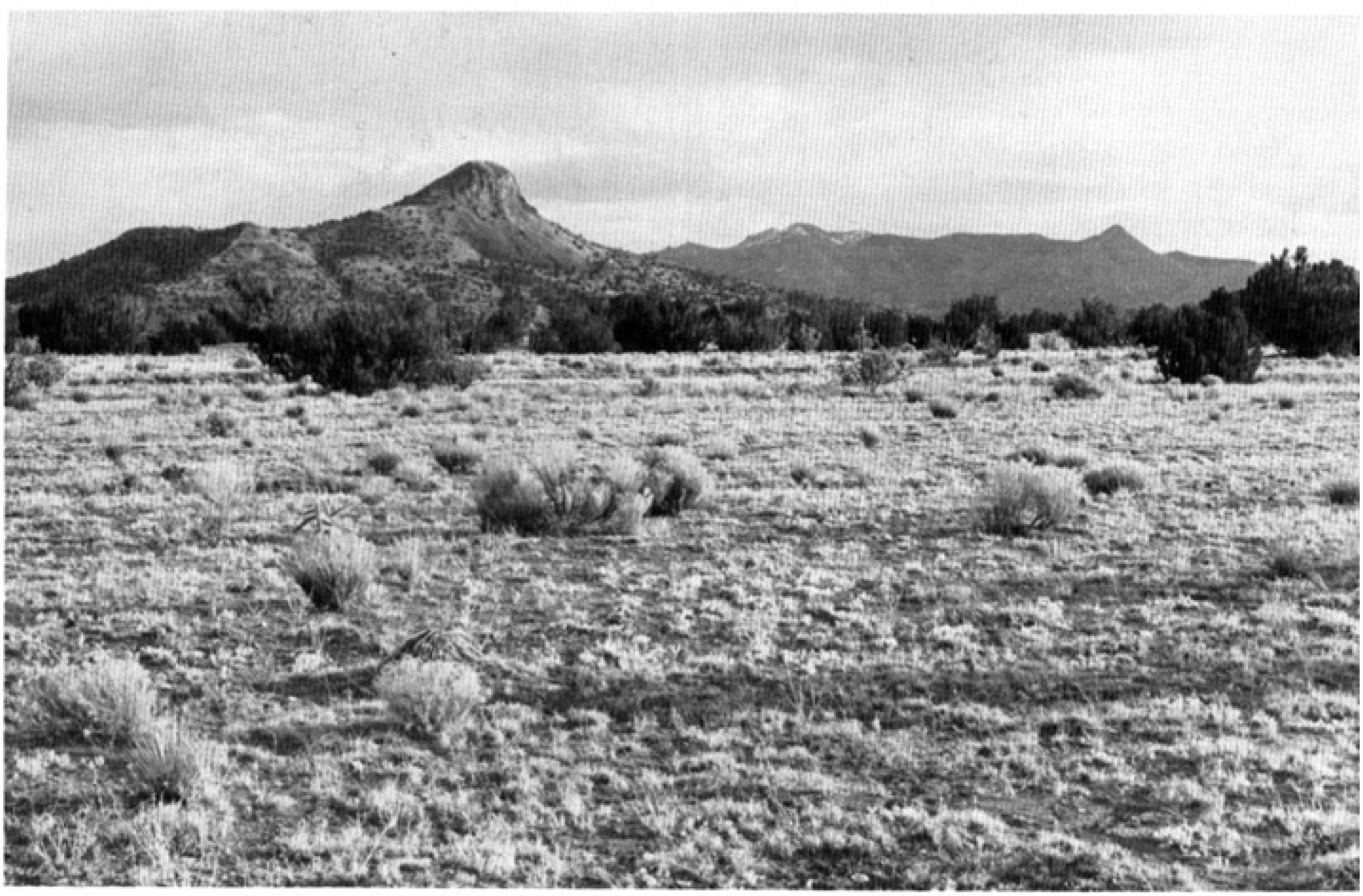
United States
Department of
Agriculture

Soil
Conservation
Service

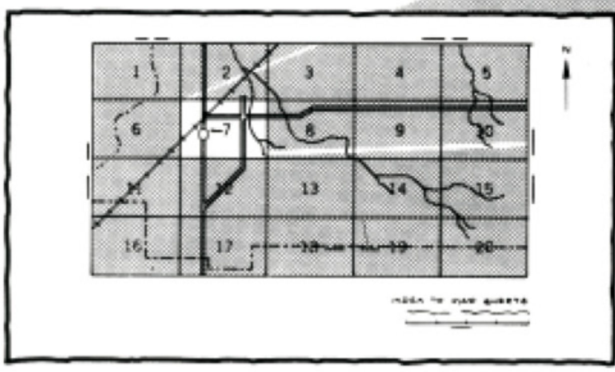
In cooperation with
United States Department
of the Interior, Bureau
of Land Management and
Bureau of Indian Affairs,
and New Mexico Agricultural
Experiment Station

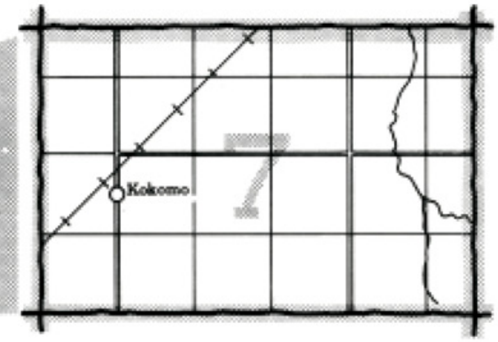
Soil Survey of Socorro County Area, New Mexico



HOW TO USE

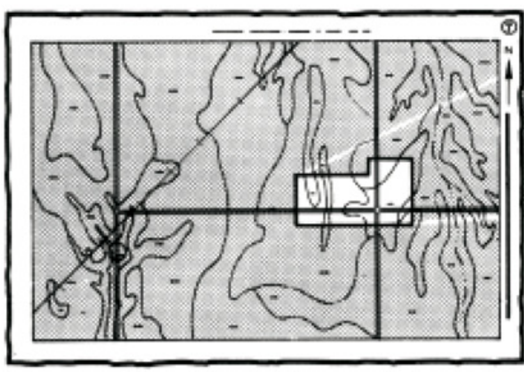
1. Locate your area of interest on the "Index to Map Sheets"

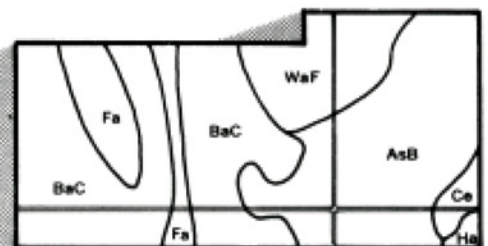




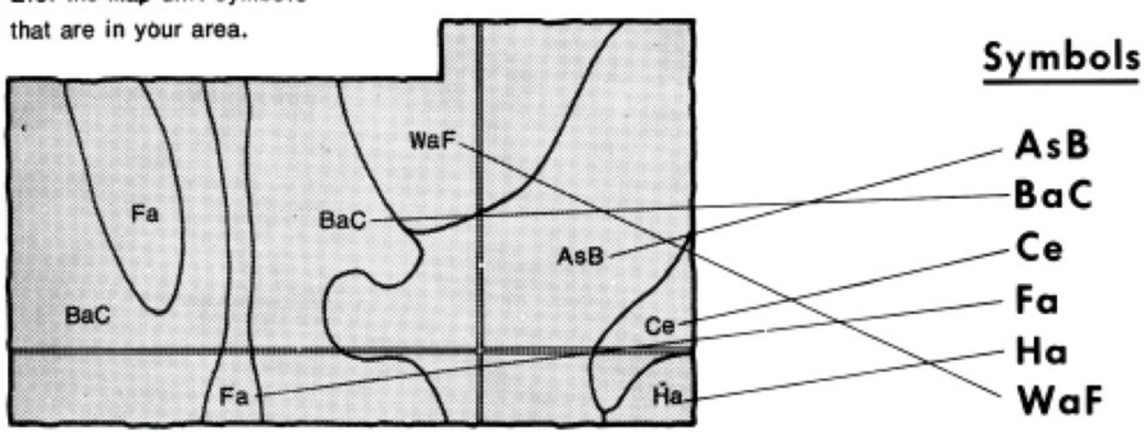
2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.



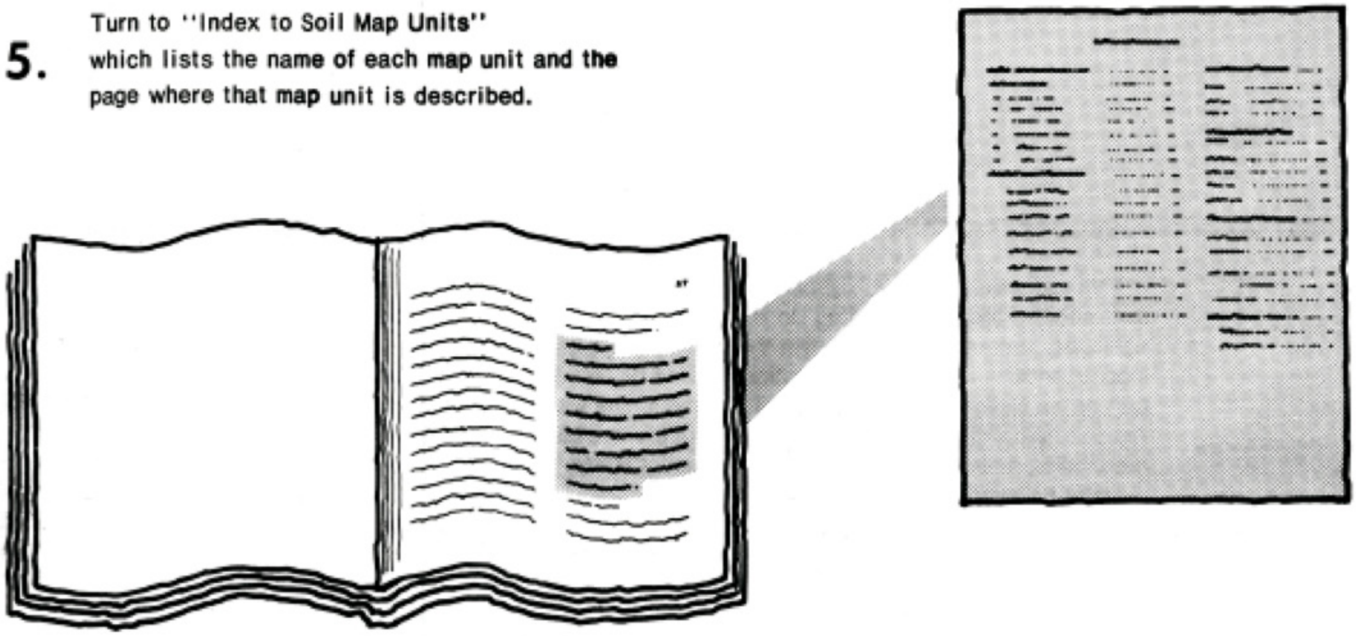


4. List the map unit symbols that are in your area.

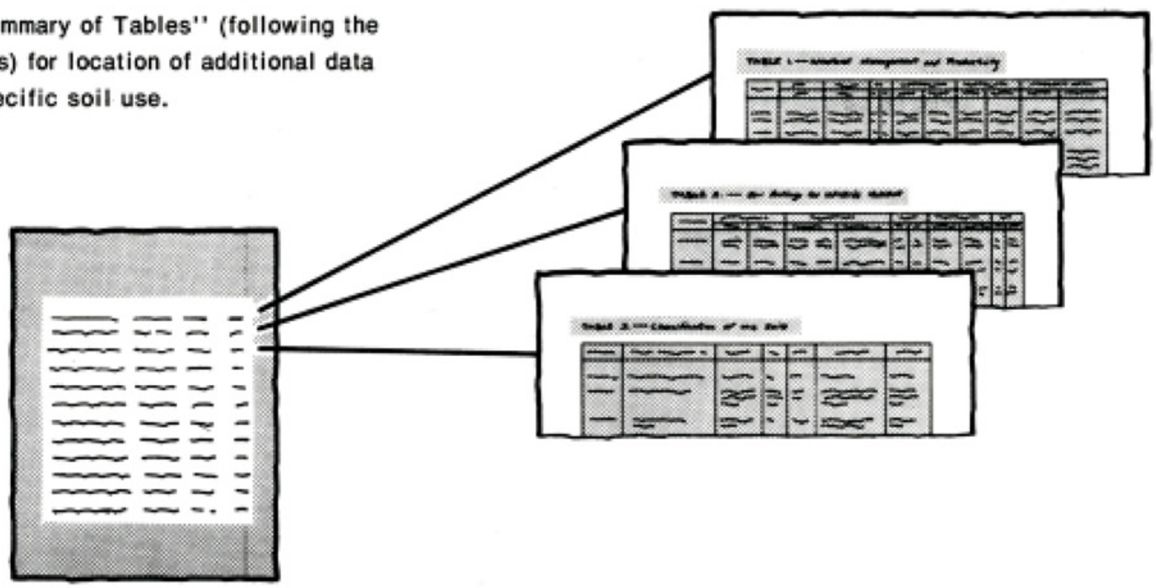


THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

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. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, handicap, or age.

Major fieldwork for this soil survey was completed in 1983. Soil names and descriptions were approved in 1984. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1983. This survey was made cooperatively by the Soil Conservation Service, the Bureau of Land Management, the Bureau of Indian Affairs, and the New Mexico Agricultural Experiment Station. It is part of the technical assistance furnished to the Carrizozo, Claunch-Pinto, East Valencia, Salado, Sierra, and Socorro Soil and Water Conservation Districts.

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 soils that could have been shown at a larger scale.

Cover: View of LaJara Peak, a prominent landmark in the survey area. Clovis soils are in foreground.

Contents

Index to map units v
Summary of tables xi
Foreword xiii
General nature of the survey area 1
Physiography, relief, and drainage 1
History and development 2
Climate 2
How this survey was made 3
General soil map units 5
Map unit descriptions 5
Detailed soil map units 13
Map unit descriptions 14
Prime farmland 93
Use and management of the soils 95
Crops and pasture 95
Rangeland 97
Woodland management and productivity 98
Woodland understory vegetation 98
Windbreaks and environmental plantings 98
Recreation 99
Wildlife habitat 99
Engineering 100
Soil properties 105
Engineering index properties 105
Physical and chemical properties 106
Soil and water features 107
Classification of the soils 109
Taxonomic units and their morphology 109
Formation of the soils 167
Parent material 167
Plant and animal life 167
Topography 168
Climate 168
Time 168
References 171
Glossary 173
Tables 181

Taxonomic Units

Abrazo series 109
Adelino Variant 110
Aftaden series 110
Agua series 111
Akela series 111
Alicia series 112
Anthony series 112
Anthony Variant 113
Arizo series 114
Armendaris series 114
Armijo series 115
Augustine series 115
Barana series 116
Belen series 116
Berino series 117
Bluepoint series 117
Brazito series 118
Bucklebar series 118
Calabasas series 119
Caliza series 119
Caliza Variant 120
Campana series 121
Cascajo series 121
Claunch series 122
Clovis series 123
Courthouse Variant 123
Creel series 124
Cuate series 124
Datil series 125
Deama series 126
Dean series 126
Deltajo series 127
Dioxice series 127
Dona Ana series 128
Elbutte series 129
Flaco series 129
Gabaldon series 130
Gila series 130
Glenberg series 131
Glendale series 131
Goldust series 132
Guy series 132
Haploborolls, aridic 133
Harvey series 133
Ildecarb series 134
Jornaham series 135
Laborcita series 135
Ladron series 136
La Fonda series 137

Landavaso series ... 137
Lapdun series ... 138
Largo series ... 138
Lemitar series ... 139
Lithic Torriorthents ... 139
Loarc series ... 140
Lozier series ... 140
Magdalena series ... 141
Majada series ... 141
Manzano series ... 142
Mespun series ... 142
Millett series ... 143
Mion series ... 143
Motoqua series ... 144
Musofare series ... 144
Navajo series ... 145
Netoma series ... 145
Nickel series ... 146
Nickel Variant ... 146
Nolam series ... 147
Oscura series ... 148
Pajarito series ... 148
Palma series ... 149
Pena series ... 149
Penistaja series ... 150
Pilabo series ... 150
Pinon series ... 151
Pirodel series ... 152
Ponciano series ... 152
Popotosa series ... 153
Puertecito series ... 154
Puice series ... 154
Rayohill series ... 155
Rizozo series ... 155
Royosa series ... 156
Saneli series ... 156
San Mateo series ... 157
Sedillo series ... 157
Socorro series ... 158
Sparank series ... 158
Tanbark series ... 159
Telescope series ... 159
Thunderbird series ... 159
Torriorthents, ustic ... 160
Travessilla series ... 160
Turney series ... 161
Turney Variant ... 161
Typic Camborthids ... 162
Typic Ustifluvents ... 162
Wink series ... 163
Winona series ... 164
Yesum series ... 164

Issued December 1988

Index to Map Units (Numerical)

11—Armijo clay, 0 to 1 percent slopes ... 14
14—Saneli clay, 0 to 1 percent slopes ... 14
22—Glendale clay loam, 0 to 1 percent slopes ... 15
26—Popotosa clay loam, 0 to 1 percent slopes ... 15
32—Gila clay loam, 0 to 1 percent slopes ... 16
37—Agua clay loam, 0 to 1 percent slopes ... 16
44—Anthony sandy loam, 0 to 1 percent slopes ... 17
48—Anthony Variant sandy clay loam, 0 to 1 percent slopes ... 17
50—Brazito fine sandy loam, 0 to 1 percent slopes. 18
52—Saneli clay, thin surface, 0 to 1 percent slopes 18
60—Typic Ustifluvents, 0 to 2 percent slopes ... 19
111—Armijo-Urban land complex, 0 to 1 percent slopes ... 19
114—Saneli-Urban land complex, 0 to 1 percent slopes ... 19
116—Caliza Variant-Urban land complex, 1 to 5 percent slopes ... 20
118—Arizo very stony loamy sand, 1 to 3 percent slopes ... 20
120—Adelino Variant-Caliza very stony sandy loams, 15 to 50 percent slopes ... 21
122—Glendale sandy loam, 0 to 1 percent slopes ... 21
124—Caliza very gravelly sandy loam, 1 to 7 percent slopes ... 22
128—Turney Variant gravelly sandy loam, 1 to 7 percent slopes ... 22
132—Gila fine sandy loam, 0 to 1 percent slopes ... 23
211—Armijo clay, occasionally flooded, 0 to 1 percent slopes ... 23
214—Saneli clay, occasionally flooded, 0 to 1 percent slopes ... 24
222—Glendale clay loam, occasionally flooded, 0 to 1 percent slopes ... 24
226—Popotosa clay loam, occasionally flooded, 0 to 1 percent slopes ... 25
232—Gila clay loam, occasionally flooded, 0 to 1 percent slopes ... 25
244—Anthony sandy loam, occasionally flooded, 0 to 1 percent slopes ... 26
250—Brazito fine sandy loam, occasionally flooded, 0 to 1 percent slopes ... 26
401—Motoqua-Rock outcrop complex, 10 to 45 percent slopes ... 27
403—Puertecito-Rock outcrop complex, 5 to 55 percent slopes ... 27
404—Motoqua, cool-Rock outcrop complex, 15 to 50 percent slopes ... 28
405—Thunderbird gravelly loam, 1 to 10 percent slopes ... 28
410—Clovis-Penistaja association, 1 to 10 percent slopes ... 29
418—Rizozo-Alicia-Rock outcrop association, 1 to 30 percent slopes ... 29
419—Navajo-Alicia association, 0 to 4 percent slopes ... 30
421—Glenberg-Riverwash association, 0 to 5 percent slopes ... 31
424—Manzano silt loam, 1 to 3 percent slopes ... 32
425—Sparank silty clay loam, 0 to 2 percent slopes. 32
431—Harvey-Winona association, 2 to 10 percent slopes ... 33
432—Harvey-Winona-Tanbark association, 1 to 45 percent slopes ... 33
434—Rizozo-Rock outcrop complex, 1 to 30 percent slopes ... 34
445—Millett-Sedillo complex, 1 to 15 percent slopes 35
446—Harvey-Dean complex, 1 to 7 percent slopes... 35
449—Cascajo very gravelly sandy loam, 15 to 30 percent slopes ... 36
450—Royosa fine sand, 1 to 6 percent slopes ... 36
451—Magdalena gravelly loam, 3 to 12 percent slopes ... 37
452—Telescope-Royosa association, 1 to 3 percent slopes ... 37
455—Datil sandy loam, 3 to 15 percent slopes ... 38
459—Pinon fine sandy loam, 1 to 12 percent slopes. 38
460—Lapdun-Datil association, 5 to 30 percent slopes ... 39
472—Abrazo-Motoqua, cool-Rock outcrop complex, 10 to 50 percent slopes ... 39
478—Royosa-Loarc association, 1 to 5 percent slopes ... 40
479—Augustine fine sandy loam, 1 to 6 percent slopes ... 41
482—Deama, dry-Rock outcrop complex, 10 to 55 percent slopes ... 41
484—Mion-San Mateo-Rock outcrop association, 1 to 10 percent slopes ... 42
491—Riverwash ... 42
510—Guy-Dioxice-Pena association, 1 to 8 percent slopes ... 43
530—Loarc loamy sand, 1 to 12 percent slopes ... 43
540—Goldust gravelly sandy loam, 2 to 8 percent slopes ... 44

549—Ladron very gravelly sandy loam, 1 to 15 percent slopes ... 44
555—Datil gravelly loam, 15 to 25 percent slopes ... 45
556—Loarc-Datil-Majada association, 2 to 12 percent slopes ... 45
570—La Fonda-Torriorthents, ustic-Rock outcrop association, 1 to 15 percent slopes ... 46
575—Flaco stony loam, 1 to 8 percent slopes ... 46
580—Landavaso sandy loam, 1 to 5 percent slopes. 47
582—Tanbark-Winona complex, 15 to 45 percent slopes ... 47
585—Rock outcrop-Travessilla complex, 1 to 10 percent slopes ... 48
600—Elbutte-Courthouse Variant-Rock outcrop complex, 5 to 45 percent slopes ... 49
601—Oscura silty clay loam, 1 to 3 percent slopes ... 49
603—Wink-Dona Ana loamy sands, 1 to 3 percent slopes ... 50
604—Turney loamy sand, 1 to 5 percent slopes ... 50
605—Armijo clay, moderately saline, 0 to 1 percent slopes ... 51
606—Largo loam, 0 to 3 percent slopes ... 51
610—Belen clay, 0 to 1 percent slopes ... 52
615—Anthony-Gila complex, 0 to 2 percent slopes ... 52
620—Bluepoint loamy fine sand, 1 to 9 percent slopes ... 53
621—Arizo-Riverwash complex, 0 to 5 percent slopes ... 53
625—Berino sandy loam, 1 to 3 percent slopes ... 54
627—Berino-Dona Ana association, 1 to 5 percent slopes ... 54
634—Lozier-Rock outcrop complex, 10 to 35 percent slopes ... 55
635—Wink-Pajarito complex, 1 to 8 percent slopes ... 55
636—Campana-Yesum association, 1 to 6 percent slopes ... 56
638—Nickel Variant very gravelly sandy loam, 2 to 15 percent slopes ... 57
641—Turney loam, 1 to 5 percent slopes ... 58
645—Yesum, overblown-Yesum complex, 0 to 3 percent slopes ... 58
646—Yesum very fine sandy loam, 0 to 6 percent slopes ... 59
648—Armijo-Glendale-Bluepoint association, 0 to 3 percent slopes ... 59
649—Nickel-Caliza very gravelly sandy loams, 1 to 30 percent slopes ... 60
650—Typic Camborthids-Nolam association, 2 to 50 percent slopes ... 61
651—Barana loam, 0 to 2 percent slopes ... 61
653—Bucklebar sandy clay loam, 1 to 3 percent slopes ... 62
655—Nolam gravelly sandy loam, 1 to 7 percent slopes ... 62
656—Aftaden-Akela-Lava flows association, 1 to 15 percent slopes ... 63
657—Akela-Lava flows-Armendaris association, 0 to 30 percent slopes ... 63
660—Dune land ... 64
689—Laborcita-Pilabo-Lemitar complex, 5 to 45 percent slopes ... 64
690—Bluepoint-Caliza complex, 1 to 30 percent slopes ... 65
695—Deltajo very channery loam, 5 to 45 percent slopes ... 66
696—Lithic Torriorthents-Lozier-Rock outcrop association, 25 to 70 percent slopes ... 66
705—Socorro-Flaco complex, 2 to 15 percent slopes ... 68
709—Penistaja-Clovis fine sandy loams, 1 to 8 percent slopes ... 69
716—Creel-Musofare-Clovis complex, 1 to 15 percent slopes ... 69
717—Penistaja-Clovis fine sands, 1 to 7 percent slopes ... 70
718—Palma, thick surface-Penistaja-Palma complex, 1 to 5 percent slopes ... 71
724—Gabaldon silt loam, 0 to 2 percent slopes ... 72
735—Netoma-Claunch association, 2 to 10 percent slopes ... 72
736—Winona-Tanbark-La Fonda complex, 1 to 20 percent slopes ... 73
737—Harvey-La Fonda association, 1 to 9 percent slopes ... 74
738—Harvey-Dean association, 1 to 9 percent slopes ... 75
749—Ildecarb-Dean gravelly loams, 1 to 10 percent slopes ... 75
760—Sedillo-Clovis association, 1 to 6 percent slopes ... 76
765—Puertecito, moist-Rock outcrop complex, 15 to 60 percent slopes ... 77
783—Ponciano very bouldery clay loam, 15 to 60 percent slopes ... 77
785—Torriorthents, ustic-Rock outcrop complex, 10 to 60 percent slopes ... 78

786—Rock outcrop-Badland complex, 25 to 100 percent slopes 78
788—Penistaja, eroded-Palma, thick surface association, 1 to 3 percent slopes 78
800—Haploborolls, aridic-Rock outcrop complex, 20 to 60 percent slopes 79
801—Calabasas association, 0 to 4 percent slopes .. 80
805—Tanbark-Rayohill complex, 1 to 5 percent slopes 80
812—Socorro very gravelly loam, 1 to 8 percent slopes 81
814—Puice-Tanbark-Harvey association, 1 to 25 percent slopes 81
816—Pirodel-Harvey-Pinon complex, 1 to 15 percent slopes 82
818—Mespun fine sand, 1 to 6 percent slopes 83
822—Pirodel fine sand, 1 to 7 percent slopes 84
824—Pinon very channery fine sandy loam, 1 to 30 percent slopes 84
826—Harvey-Ildecarb-Pinon complex, 2 to 10 percent slopes 85
828—Cuate-Tanbark complex, 2 to 15 percent slopes 86
830—Cuate-Deama-Tanbark complex, 15 to 60 percent slopes 86
832—Jornaham cobbly fine sandy loam, 2 to 10 percent slopes 87
834—San Mateo-Glenberg complex, 0 to 2 percent slopes 88
836—Rayohill-Clovis fine sandy loams, 1 to 6 percent slopes 88
838—Tanbark-Rock outcrop complex, 35 to 80 percent slopes 89
840—Deama-Rock outcrop complex, 3 to 40 percent slopes 89
845—Winona-Rock outcrop complex, 5 to 45 percent slopes 90
850—Creel-Ponciano association, 2 to 45 percent slopes 91

Index to Map Units (Alphabetical)

472—Abrazo-Motoqua, cool-Rock outcrop complex, 10 to 50 percent slopes 39
120—Adelino Variant-Caliza very stony sandy loams, 15 to 50 percent slopes 21
656—Aftaden-Akela-Lava flows association, 1 to 15 percent slopes 63
37—Agua clay loam, 0 to 1 percent slopes 16
657—Akela-Lava flows-Armendaris association, 0 to 30 percent slopes 63
44—Anthony sandy loam, 0 to 1 percent slopes 17
244—Anthony sandy loam, occasionally flooded, 0 to 1 percent slopes 26
615—Anthony-Gila complex, 0 to 2 percent slopes 52
48—Anthony Variant sandy clay loam, 0 to 1 percent slopes 17
11—Armijo clay, 0 to 1 percent slopes 14
211—Armijo clay, occasionally flooded, 0 to 1 percent slopes 23
605—Armijo clay, moderately saline, 0 to 1 percent slopes 51
648—Armijo-Glendale-Bluepoint association, 0 to 3 percent slopes 59
111—Armijo-Urban land complex, 0 to 1 percent slopes 19
621—Arizo-Riverwash complex, 0 to 5 percent slopes 53
118—Arizo very stony loamy sand, 1 to 3 percent slopes 20
479—Augustine fine sandy loam, 1 to 6 percent slopes 41
651—Barana loam, 0 to 2 percent slopes 61
610—Belen clay, 0 to 1 percent slopes 52
625—Berino sandy loam, 1 to 3 percent slopes 54
627—Berino-Dona Ana association, 1 to 5 percent slopes 54
620—Bluepoint loamy fine sand, 1 to 9 percent slopes 53
690—Bluepoint-Caliza complex, 1 to 30 percent slopes 65
50—Brazito fine sandy loam, 0 to 1 percent slopes. 18
250—Brazito fine sandy loam, occasionally flooded, 0 to 1 percent slopes 26
653—Bucklebar sandy clay loam, 1 to 3 percent slopes 62
801—Calabasas association, 0 to 4 percent slopes 80
124—Caliza very gravelly sandy loam, 1 to 7 percent slopes 22
116—Caliza Variant-Urban land complex, 1 to 5 percent slopes 20
636—Campana-Yesum association, 1 to 6 percent slopes 56
449—Cascajo very gravelly sandy loam, 15 to 30 percent slopes 36
410—Clovis-Penistaja association, 1 to 10 percent slopes 29
716—Creel-Musofare-Clovis complex, 1 to 15 percent slopes 69
850—Creel-Ponciano association, 2 to 45 percent slopes 91
830—Cuate-Deama-Tanbark complex, 15 to 60 percent slopes 86
828—Cuate-Tanbark complex, 2 to 15 percent slopes 86
455—Datil sandy loam, 3 to 15 percent slopes 38
555—Datil gravelly loam, 15 to 25 percent slopes 45
840—Deama-Rock outcrop complex, 3 to 40 percent slopes 89
482—Deama, dry-Rock outcrop complex, 10 to 55 percent slopes 41
695—Deltajo very channery loam, 5 to 45 percent slopes 66
660—Dune land 64
600—Elbutte-Courthouse Variant-Rock outcrop complex, 5 to 45 percent slopes 49
575—Flaco stony loam, 1 to 8 percent slopes 46
724—Gabaldon silt loam, 0 to 2 percent slopes 72
132—Gila fine sandy loam, 0 to 1 percent slopes 23
32—Gila clay loam, 0 to 1 percent slopes 16
232—Gila clay loam, occasionally flooded, 0 to 1 percent slopes 25
421—Glenberg-Riverwash association, 0 to 5 percent slopes 31
122—Glendale sandy loam, 0 to 1 percent slopes 21
22—Glendale clay loam, 0 to 1 percent slopes 15
222—Glendale clay loam, occasionally flooded, 0 to 1 percent slopes 24
540—Goldust gravelly sandy loam, 2 to 8 percent slopes 44
510—Guy-Dioxice-Pena association, 1 to 8 percent slopes 43
800—Haploborolls, aridic-Rock outcrop complex, 20 to 60 percent slopes 79
446—Harvey-Dean complex, 1 to 7 percent slopes 35
738—Harvey-Dean association, 1 to 9 percent slopes 75
826—Harvey-Ildecarb-Pinon complex, 2 to 10 percent slopes 85

737—Harvey-La Fonda association, 1 to 9 percent slopes ... 74
431—Harvey-Winona association, 2 to 10 percent slopes ... 33
432—Harvey-Winona-Tanbark association, 1 to 45 percent slopes ... 33
749—Ildecarb-Dean gravelly loams, 1 to 10 percent slopes ... 75
832—Jornaham cobbly fine sandy loam, 2 to 10 percent slopes ... 87
689—Laborcita-Pilabo-Lemitar complex, 5 to 45 percent slopes ... 64
549—Ladron very gravelly sandy loam, 1 to 15 percent slopes ... 44
570—La Fonda-Torriorthents, ustic-Rock outcrop association, 1 to 15 percent slopes ... 46
580—Landavaso sandy loam, 1 to 5 percent slopes. 47
460—Lapdun-Datil association, 5 to 30 percent slopes ... 39
606—Largo loam, 0 to 3 percent slopes ... 51
696—Lithic Torriorthents-Lozier-Rock outcrop association, 25 to 70 percent slopes ... 66
530—Loarc loamy sand, 1 to 12 percent slopes ... 43
556—Loarc-Datil-Majada association, 2 to 12 percent slopes ... 45
634—Lozier-Rock outcrop complex, 10 to 35 percent slopes ... 55
451—Magdalena gravelly loam, 3 to 12 percent slopes ... 37
424—Manzano silt loam, 1 to 3 percent slopes ... 32
818—Mespun fine sand, 1 to 6 percent slopes ... 83
445—Millett-Sedillo complex, 1 to 15 percent slopes 35
484—Mion-San Mateo-Rock outcrop association, 1 to 10 percent slopes ... 42
401—Motoqua-Rock outcrop complex, 10 to 45 percent slopes ... 27
404—Motoqua, cool-Rock outcrop complex, 15 to 50 percent slopes ... 28
419—Navajo-Alicia association, 0 to 4 percent slopes ... 30
735—Netoma-Claunch association, 2 to 10 percent slopes ... 72
649—Nickel-Caliza very gravelly sandy loams, 1 to 30 percent slopes ... 60
638—Nickel Variant very gravelly sandy loam, 2 to 15 percent slopes ... 57
655—Nolam gravelly sandy loam, 1 to 7 percent slopes ... 62
601—Oscura silty clay loam, 1 to 3 percent slopes ... 49
718—Palma, thick surface-Penistaja-Palma complex, 1 to 5 percent slopes ... 71
717—Penistaja-Clovis fine sands, 1 to 7 percent slopes ... 70
709—Penistaja-Clovis fine sandy loams, 1 to 8 percent slopes ... 69
788—Penistaja, eroded-Palma, thick surface association, 1 to 3 percent slopes ... 78
459—Pinon fine sandy loam, 1 to 12 percent slopes. 38
824—Pinon very channery fine sandy loam, 1 to 30 percent slopes ... 84
822—Pirodel fine sand, 1 to 7 percent slopes ... 84
816—Pirodel-Harvey-Pinon complex, 1 to 15 percent slopes ... 82
783—Ponciano very bouldery clay loam, 15 to 60 percent slopes ... 77
26—Popotosa clay loam, 0 to 1 percent slopes ... 15
226—Popotosa clay loam, occasionally flooded, 0 to 1 percent slopes ... 25
403—Puertecito-Rock outcrop complex, 5 to 55 percent slopes ... 27
765—Puertecito, moist-Rock outcrop complex, 15 to 60 percent slopes ... 77
814—Puice-Tanbark-Harvey association, 1 to 25 percent slopes ... 81
836—Rayohill-Clovis fine sandy loams, 1 to 6 percent slopes ... 88
491—Riverwash ... 42
418—Rizozo-Alicia-Rock outcrop association, 1 to 30 percent slopes ... 29
434—Rizozo-Rock outcrop complex, 1 to 30 percent slopes ... 34
786—Rock outcrop-Badland complex, 25 to 100 percent slopes ... 78
585—Rock outcrop-Travessilla complex, 1 to 10 percent slopes ... 48
450—Royosa fine sand, 1 to 6 percent slopes ... 36
478—Royosa-Loarc association, 1 to 5 percent slopes ... 40
14—Saneli clay, 0 to 1 percent slopes ... 14
214—Saneli clay, occasionally flooded, 0 to 1 percent slopes ... 24
114—Saneli-Urban land complex, 0 to 1 percent slopes ... 19
52—Saneli clay, thin surface, 0 to 1 percent slopes 18
834—San Mateo-Glenberg complex, 0 to 2 percent slopes ... 88

760—Sedillo-Clovis association, 1 to 6 percent slopes 76
425—Sparank silty clay loam, 0 to 2 percent slopes. 32
812—Socorro very gravelly loam, 1 to 8 percent slopes 81
705—Socorro-Flaco complex, 2 to 15 percent slopes 68
805—Tanbark-Rayohill complex, 1 to 5 percent slopes 80
838—Tanbark-Rock outcrop complex, 35 to 80 percent slopes 89
582—Tanbark-Winona complex, 15 to 45 percent slopes 47
452—Telescope-Royosa association, 1 to 3 percent slopes 37
405—Thunderbird gravelly loam, 1 to 10 percent slopes 28
785—Torriorthents, ustic-Rock outcrop complex, 10 to 60 percent slopes 78
604—Turney loamy sand, 1 to 5 percent slopes 50
641—Turney loam, 1 to 5 percent slopes 58
128—Turney Variant gravelly sandy loam, 1 to 7 percent slopes 22
650—Typic Camborthids-Nolam association, 2 to 50 percent slopes 61
60—Typic Ustifluvents, 0 to 2 percent slopes 19
603—Wink-Dona Ana loamy sands, 1 to 3 percent slopes 50
635—Wink-Pajarito complex, 1 to 8 percent slopes... 55
845—Winona-Rock outcrop complex, 5 to 45 percent slopes 90
736—Winona-Tanbark-La Fonda complex, 1 to 20 percent slopes 73
646—Yesum very fine sandy loam, 0 to 6 percent slopes 59
645—Yesum, overblown-Yesum complex, 0 to 3 percent slopes 58

Summary of Tables

Temperature and precipitation (table 1) ... 182

Acreage and proportionate extent of the soils (table 2) ... 183
Acres. Percent.

Land capability classes and yields per acre of crops and pasture on irrigated soils (table 3) ... 186
Land capability. Alfalfa hay. Peppers, fresh chili. Corn silage. Corn. Pasture.

Windbreaks and environmental plantings on irrigated soils (table 4) ... 187

Recreational development (table 5) ... 190
Camp areas. Picnic areas. Playgrounds. Paths and trails. Golf fairways.

Wildlife habitat (table 6) ... 205
Potential for habitat elements. Potential as habitat for—Openland wildlife, Woodland wildlife, Wetland wildlife, Rangeland wildlife.

Building site development (table 7) ... 218
Shallow excavations. Dwellings without basements. Dwellings with basements. Small commercial buildings. Local roads and streets. Lawns and landscaping.

Sanitary facilities (table 8) ... 233
Septic tank absorption fields. Sewage lagoon areas. Trench sanitary landfill. Area sanitary landfill. Daily cover for landfill.

Construction materials (table 9) ... 249
Roadfill. Sand. Gravel. Topsoil.

Water management (table 10) ... 264
Limitations for—Pond reservoir areas; Embankments, dikes, and levees. Features affecting—Drainage, Irrigation, Terraces and diversions, Grassed waterways.

Engineering index properties (table 11) ... 279
Depth. USDA texture. Classification—Unified, AASHTO. Fragments greater than 3 inches. Percentage passing sieve number—4, 10, 40, 200. Liquid limit. Plasticity index.

Physical and chemical properties of the soils (table 12) ... 303
Depth. Clay. Permeability. Available water capacity. Soil reaction. Salinity. Shrink-swell potential. Erosion factors. Wind erodibility group. Organic matter.

Soil and water features (table 13).. 317
Hydrologic group. Flooding. High water table. Bedrock. Risk of corrosion.
Classification of the soils (table 14)... 327
Family or higher taxonomic class.

Foreword

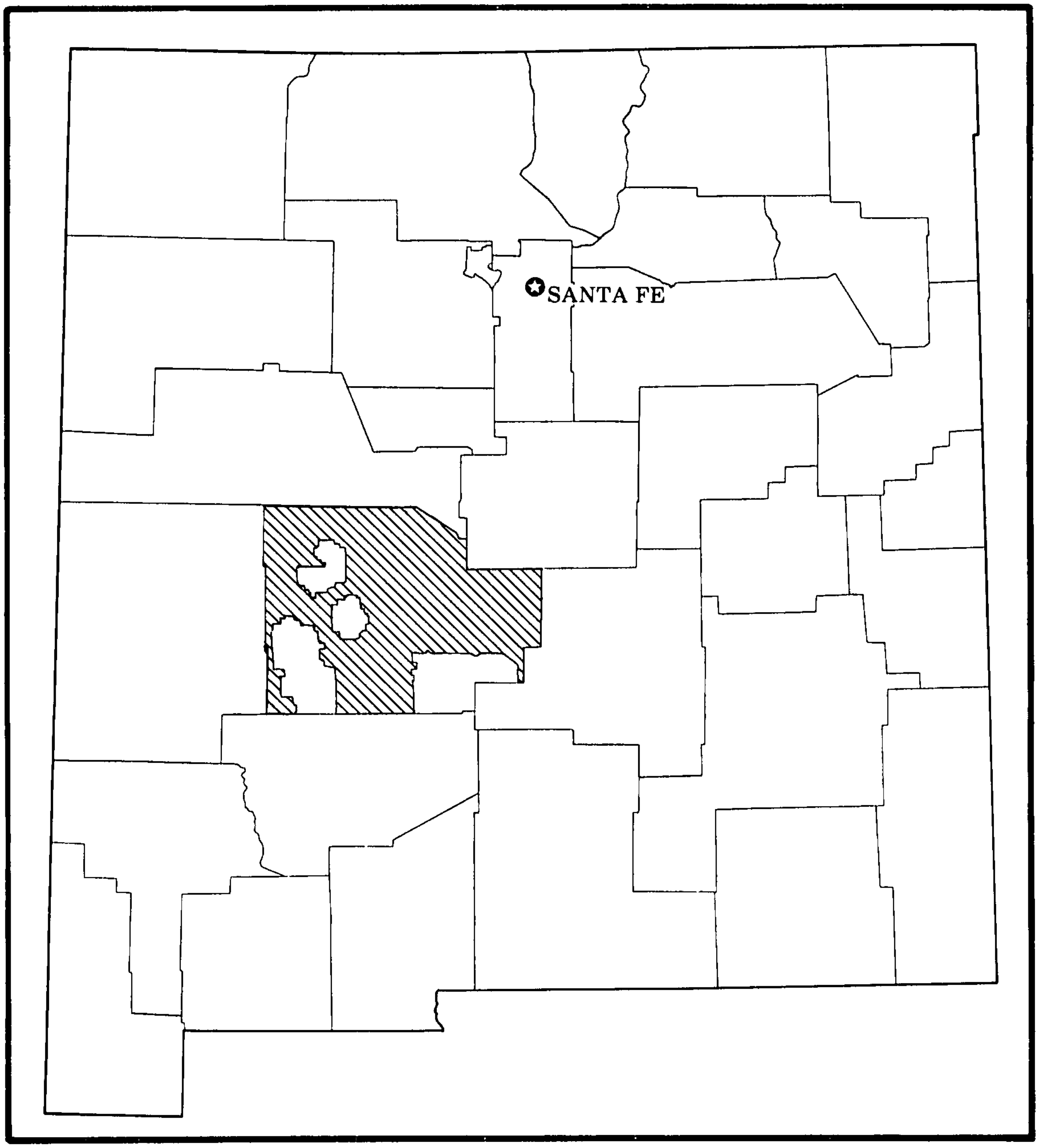
This soil survey contains information that can be used in land-planning programs in Socorro County Area. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact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

Ray T. Margo, Jr.
State Conservationist
Soil Conservation Service



Location of Socorro County Area in New Mexico.

Soil Survey of
Socorro County Area, New Mexico

By William R. Johnson, Soil Conservation Service

Fieldwork by Joseph V. Chiaretti, Jr., Terry E. Hilley,
William R. Johnson, David P. Kitchie, and Archie J. Roath,
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
Bureau of Indian Affairs, and New Mexico Agricultural Experiment Station

SOCORRO COUNTY AREA is in the central part of New Mexico. It has a total area of 3,154,820 acres, or about 4,929 square miles. The three major communities are Socorro, the county seat; Magdalena; and San Antonio. The population of Socorro is 9,200, and that of Socorro County is 12,000.

Elevation of the survey area ranges from about 9,200 feet at Ladron Peak to about 4,400 feet where the Rio Grande enters Sierra County.

Interstate 25 traverses the survey area from north to south, adjacent to the Rio Grande. U.S. Highways 60 and 380 traverse the area from east to west. Highway 380 extends from the Lincoln County line to Interstate 25 at San Antonio, and Highway 60 extends from the Torrance County line east to Bernardo and from Socorro to the Catron County line, west of Magdalena.

The Rio Grande, the only perennial river in the area, traverses the central part of the area from north to south. The Rio Salado and Rio Puerco are intermittent; they flow into the Rio Grande in the northern half of the area.

Livestock grazing and high-intensity irrigated farming in the Rio Grande Valley are the principle land uses of the survey area.

Descriptions, names, and delineations of soils in this soil survey do not fully agree with those of Valencia, Torrance, Sierra, and Lincoln Counties, White Sands Missile Range, or the Cibola National Forest. This is the result of modifications in soil classification and series concepts and the different needs, uses, and time of the soil survey.

The soils in the Alamo community were correlated to the present soil legend in the office using a 1967 report from the Bureau of Indian Affairs. Differences are the result of better knowledge of soils, modifications in series concepts, intensity of mapping, or the extent of soils within the survey.

General Nature of the Survey Area

This section briefly discusses the physiography, relief, and drainage; history and development; and climate of the survey area.

Physiography, Relief, and Drainage

The survey area lies within two major physiographic provinces—the Basin and Range province and the Colorado Plateau province. The Basin and Range province makes up most of the survey area. The Sacramento section in this province extends from the west side of Chupadera Mesa east to the Lincoln County line; the Mexican Highland section makes up the central part of the area. The northwestern part of the survey area is in the Acoma-Zuni section of the Colorado

Plateau province. The rest of the survey area, extending west and southwest from Socorro, is part of the Datil-Mogollon section, which is a transitional zone between the Colorado Plateau and the Basin and Range provinces (*11*).

The northwestern part of the survey area is characterized by moderate relief, scarped mesa and cuesta topography, local canyons cut in sedimentary rock, and isolated buttes of volcanic origin. Elevation in this part ranges from about 6,000 to 8,000 feet. It is drained by the Rio Salado.

The western and southwestern parts of the survey area are characterized by extreme relief, high fault block mountains of igneous rock, and broad, structural basins such as the Plains of San Agustin. Elevation ranges from about 5,700 to 9,200 feet. This part of the survey area is drained into the Rio Grande by the Rio Salado, Alamosa Creek, La Jencia Creek, and Milligan Gulch. Small areas of this part drain into closed depressional areas in the La Jencia Basin and Plains of San Agustin.

The central part of the survey area is characterized by the long structural depressional areas of the Rio Grande rift valley and Jornada del Muerto Basin. These areas are dominated by broad alluvial piedmont slopes and plains and some low, isolated fault block mountains and ridges. Elevation ranges from about 4,400 to 7,500 feet. Most of this area drains into the Rio Grande; however, the part west of Chupadera Mesa drains into the northern part of the Jornada del Muerto.

The eastern part of the survey area is dominated by the large limestone plateau of Chupadera Mesa. It is characterized by moderate relief and long ridges, small canyons, hills and knolls, and plains. Elevation ranges from about 4,900 to 7,000 feet. This part drains mainly east into a closed depressional area near the town of Claunch or south into the northern end of the Tularosa Basin. It also has extensive relict karst topography that accounts for much internal drainage.

History and Development

The Spanish exploration of the area that was to become Socorro County began with the expedition of Coronado in 1540. The expedition of Don Juan de Onate reached the area in June 1598. Onate gave the name Socorro, which means aid, or succor, to the Pueblo of Pilabo, commemorating the food and assistance given his party by the natives. The Spanish colonies were abandoned in 1680 because of hostilities associated with the Pueblo Indian revolt in northern New Mexico.

The Spanish reconquered New Mexico in 1693, but the town of Socorro and surrounding villages were not resettled until 1816 (*10*). Large grants of land given by the King of Spain aided resettlement efforts. Two of these land grants now make up most of the Bosque del Apache and Sevilleta National Wildlife Refuges.

New Mexico became a territory of the United States in 1848, following the Mexican-American War. Socorro County became a division of the territory of New Mexico in July 1850. Fort Craig was established in 1851 to protect the lower Rio Grande Valley.

Socorro County grew rapidly in the 1880's, following the end of the Apache Indian wars and the arrival of the Santa Fe Railroad. Rich mineral deposits in the nearby mountains allowed Socorro to become the mining and smelting center of the southwest (*10*). Livestock ranching also stimulated growth in the county. Cattle by the tens of thousands were annually driven across the Plains of San Agustin to the railhead at Magdalena.

Irrigated farming and livestock ranching are the main industries in Socorro County. Socorro is the headquarters of the New Mexico Institute of Mining and Technology and the New Mexico Bureau of Mines and Mineral Resources, making it a major scientific center. The nearby National Radio Astronomy Observatory and White Sands Missile Range also employ many technical and scientific personnel.

Climate

By Frank E. Houghton, climatologist for New Mexico, National Oceanic and Atmospheric Administration.

The climate of Socorro County Area is continental. It ranges from arid in the narrow Rio Grande Valley to semiarid on the uplands and mountains, which rise to the east and west from the valley.

The average annual precipitation is about 8 inches in the valley, 14 inches on the mesas and uplands, and 18 inches or more on the mountain peaks. July through September are the rainiest months, receiving nearly half the annual average. More than 70 percent of the annual average precipitation is received during the warmest 6 months. The main source of moisture during this rainy season is air from over the Gulf of Mexico, flowing from the southeast in the general circulation about the Bermuda high pressure area, which shifts westward in summer. Most of the warm-season precipitation falls during thunderstorms, which usually are brief but sometimes are heavy and occasionally are accompanied by hail. Tornadoes are rare and have caused only minor damage. During winter, the main source of moisture is eastward-moving Pacific Ocean storms, which lose much of their moisture in the mountains west of New Mexico. The average precipitation in winter is less than 0.5 inch. The annual average number of days having 0.10 inch or more of precipitation ranges from 19 in the valley to 36 in the mountains and eastern areas. Precipitation varies greatly from year to year and month to month. San Marcial records show that 24.58 inches fell in 1859 and only 1.08 inches in 1901; 11.87 inches fell in August 1859 and only 0.03 in August 1919. The heaviest 1-day rainfall was 5.10 inches on July 25, 1915.

Average annual snowfall ranges from 5 inches in the valley to 25 inches or more in the mountains. Precipitation may fall as snow in the valley during November through March and in the mountains during October through April. Although snowfall is rare and amounts generally are light, as much as 16 inches has fallen in a single storm. Snow generally remains on the ground in the valley for only a short time.

Mean annual temperature ranges from 59 degrees in the Rio Grande Valley to 48 degrees at the higher elevations of the west, and it is even cooler on mountain peaks. The extreme temperature of 113 degrees was recorded at San Marcial on June 25, 1902, and -31 degrees was recorded at Agustin on January 6, 1971. The average annual number of days that temperatures reach 90 degrees or more ranges from 111 at Bosque del Apache, in the valley, to 21 in the mountainous areas. Most summer days in the valley reach 90 degrees, but few days reach 100 degrees. In areas above 6,500 feet, less than 30 days a year reach 90 degrees and only a few days reach 100 degrees. From mid-November to mid-March most nights in the valley reach freezing, and at Agustin most nights from mid-October to mid-May reach freezing. Few days in the valley have temperatures at zero or below.

The average freeze-free period in the valley is about 6.5 months, from mid-April to late in October. At Agustin, the freeze-free period is 4 months, from the end of May to the end of September.

Table 1 gives temperature and precipitation as recorded at Socorro. The information generally is representative of other locations in the county, if the effects of elevation are considered.

The sun shines an average of about 3,400 hours a year, or 75 percent of the time possible. It shines 70 percent of the time possible in January to more than 75 percent in June. Average annual relative humidity is 45 percent. It ranges from 60 percent in winter to 30 percent in June. Relative humidity ranges from 60 percent early in the morning to 30 percent in the afternoon. Winds in the valley are predominantly northerly in winter and southerly in summer. Northerly winds are more common in the morning, and southerly winds are more common in the afternoon. On the mesas and in the mountains, the prevailing winds are more westerly. Average annual windspeed, estimated from nearby stations, is 9 miles per hour. Winds are strongest in spring, about 12 miles per hour, and they are lightest in fall and winter, about 8 miles per hour. Strongest winds are mainly from the southwest. Average annual evaporation from a Class A pan is estimated to range from 105 inches in the southern part of the river valley to 95 inches at the higher elevations; two-thirds of the years are within 6 inches of the averages. About 70 percent of the annual evaporation occurs during May through October, the warmest 6 months of the year.

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. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; 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 material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biologic activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind or 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. Thus, during mapping, this model enables the soil scientist to predict with considerable accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Individual soils on the landscape commonly merge gradually into one another as their characteristics gradually change. To construct an accurate 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 (units). 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. Soil taxonomy, 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.

While the soil survey was in progress, samples of some of the soils in the area were collected for laboratory analyses and for engineering tests. Soil scientists interpreted 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 were field tested through observation of the soils in different uses and under different levels of management. Some interpretations were modified to fit local conditions, and some new interpretations were developed to meet local needs. Data were 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 were 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 state with a fairly high degree of probability that a given soil will have a high water table within certain depths in most years, but they cannot predict 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.

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.

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

Moist soils and Rock outcrop

This group consists of five map units. It makes up about 36 percent of the survey area. Slope is generally 0 to 50 percent, but minor components range from 1 to 100 percent. The present vegetation is grass and trees. Elevation is dominantly 5,200 to 8,100 feet, but minor components range to 9,200 feet. The average annual precipitation is about 9 to 15 inches, the average annual air temperature is 47 to 59 degrees F, and the average frost-free period is 120 to 180 days.

The soils formed in alluvium, colluvium, and eolian material derived dominantly from volcanic rock, sandstone, and shale.

This group is used for livestock grazing and wildlife habitat.

1. Navajo-Travessilla-Rock outcrop

Deep, very shallow, and shallow soils, and Rock outcrop; on mesas and cuestas and in swales

This map unit is in the northwestern corner of the survey area. Slope is mainly 0 to 30 percent, but minor components range to 65 percent. The present vegetation is grass, shrubs, and juniper. Elevation is mainly 5,400 to 7,000 feet, but minor components range to 8,200 feet. The average annual precipitation is 9 to 13 inches, the average annual air temperature is 50 to 59 degrees F, and average frost-free period is 145 to 180 days.

This unit makes up about 10 percent of the survey area. It is about 26 percent Navajo and similar soils, 23 percent Travessilla and similar soils, and 15 percent Rock outcrop. The remaining 36 percent is components of minor extent.

Navajo soils are in swales. These soils are deep, well drained, and very slowly permeable. They formed in alluvium derived dominantly from red shale and claystone. The surface layer is reddish brown silt loam about 3 inches thick. The upper 13 inches of the underlying material is reddish brown silty clay loam, and the lower part to a depth of 60 inches or more is reddish brown silty clay.

Travessilla soils are on mesas and on long dip slopes of cuestas. These soils are very shallow and shallow, well drained, and moderately rapidly permeable. They formed in alluvial and eolian material derived dominantly from sandstone. The surface layer is light yellowish brown gravelly fine sandy loam about 3 inches thick. The underlying material is brown and pale brown gravelly fine sandy loam about 10 inches thick. Hard sandstone is at a depth of 13 inches.

Rock outcrop consists of exposed sandstone, shale, basalt, and limestone.

Of minor extent in this unit are Clovis soils on plains, Alicia soils in swales, and Winona and Rizozo soils on hills.

This unit is used for livestock grazing and wildlife habitat.

This unit supports a wildlife community that includes mule deer, gray fox, bobcat, porcupine, cliff chipmunk, white-throated woodrat, pinyon mouse, golden eagle, great horned owl, red-tailed hawk, cliff swallow, bank swallow, white-throated swift, crevice spiny lizard, red-spotted toad, and rock rattlesnake.

Riparian vegetation of the adjoining Rio Salado and tributaries provides habitat that attracts a diverse wildlife community that includes both nesting and migrating birds. The river provides seasonal habitat for waterfowl, shore and marsh birds, and other wetland wildlife.

2. Puertecito-Cascajo-Rock outcrop

Very shallow, shallow, and deep soils, and Rock outcrop; on hills, knolls, and mountains

This map unit is in the west-central part of the survey area. Slope is mainly 15 to 50 percent, but minor components range from 1 to 100 percent. The present vegetation is grass with areas of scattered pinyon and juniper. Elevation is mainly 5,200 to 7,600 feet, but minor components range to 8,300 feet. The average annual precipitation is 10 to 15 inches, the average annual air temperature is 47 to 58 degrees F, and the average frost-free period is 120 to 180 days.

This unit makes up about 5 percent of the survey area. It is about 31 percent Puertecito and similar soils, 23 percent Cascajo and similar soils, and 16 percent Rock outcrop. The remaining 30 percent is components of minor extent.

Puertecito soils are on hills and mountains. These soils are very shallow and shallow, well drained, and moderately slowly permeable. They formed in alluvium and colluvium derived dominantly from tuff. Typically, the surface layer is dark brown very gravelly loam about 2 inches thick. The upper 7 inches of the subsoil is dark brown very gravelly loam, and the lower 5 inches is reddish brown very gravelly clay loam. Tuff is at a depth of 14 inches.

Cascajo soils are on hills and knolls. These soils are deep, excessively drained, and rapidly permeable. They formed in alluvium. Typically, the surface layer is brown very gravelly sandy loam about 2 inches thick. The subsoil is pale brown very gravelly sandy loam about 7 inches thick. The upper 8 inches of the substratum is very pale brown very gravelly sandy loam, and the lower part to a depth of 60 inches or more is light yellowish brown very gravelly loamy sand.

Rock outcrop consists of areas of exposed tuff, lava, and limestone.

Of minor extent in this unit are Motoqua soils on hills at higher elevations, Datil soils on fan terraces, and Riverwash in arroyos.

This unit is used for livestock grazing and wildlife habitat.

Areas of the unit that support pinyon and juniper provide habitat for wildlife such as mule deer, mountain lion, bobcat, gray fox, ringtail, porcupine, desert cottontail, rock squirrel, chipmunk, white-throated woodrat, pinyon mouse, golden eagle, Swainson's hawk, common raven, pinyon jay, Cassin's kingbird, chipping sparrow, red-spotted toad, mountain patchnose snake, black-tailed rattlesnake, and short-horned, collared, and tree lizards.

Areas on hills that do not support pinyon and juniper provide habitat for wildlife such as coyote, black-tailed jackrabbit, spotted ground squirrel, Merriam's kangaroo rat, mourning dove, meadowlark, horned lark, Couch's spadefoot toad, and rock rattlesnake.

Areas of this unit that support deciduous riparian trees provide a unique habitat that supports a large and diverse wildlife population. Very small included areas of irrigated cropland provide seasonal food sources that attract birds and other wildlife. In addition to the kinds of wildlife named above, this habitat also supports tassel-eared squirrel and many species of nesting birds, and it serves as a migration route for others.

3. Millett-Sedillo-Motoqua

Deep and shallow soils; on mountains, hills, bajadas, and fan terraces

This map unit is in the west-central part of the survey area. Slope is mainly 0 to 30 percent, but minor components range to 50 percent. The present vegetation is grass with areas of scattered trees. Elevation is mainly 5,400 to 7,400 feet, but minor components range to 8,500 feet. The average annual precipitation is 10 to 15 inches, the average annual air temperature is 47 to 56 degrees F, and the average frost-free period is 120 to 180 days.

This unit makes up about 8 percent of the survey area. It is about 42 percent Millett and similar soils, 19 percent Sedillo and similar soils, and 12 percent Motoqua and similar soils. The remaining 27 percent is components of minor extent.

Millett soils are on bajadas. These soils are deep, well drained, and moderately permeable. They formed in alluvium. Typically, the surface layer is brown gravelly sandy loam about 3 inches thick. The upper 6 inches of the subsoil is brown gravelly loam, and the lower 9 inches is light brown gravelly sandy clay loam. The substratum to a depth of 60 inches or more is pink very gravelly sandy loam and very gravelly loam.

Sedillo soils are on fan terraces and bajadas. These soils are deep, well drained, and moderately slowly permeable. They formed in alluvium derived mainly from rhyolitic tuff, lava, and granite. Typically, the surface layer is brown very gravelly fine sandy loam about 3 inches thick. The subsoil is reddish brown very gravelly clay loam and brown very gravelly sandy clay loam about 16 inches thick. The substratum to a depth of 60 inches or more is pink and light brown very gravelly fine sandy loam.

Motoqua soils are on mountains, hills, and ridges. These soils are shallow, well drained, and moderately slowly permeable. They formed in alluvium derived mainly from tuff. Typically, the surface layer is brown very gravelly loam about 2 inches thick. The upper 4 inches of the subsoil is dark brown very cobbly loam, and the lower 6 inches is brown very cobbly clay loam. Hard rhyolitic tuff is at a depth of 12 inches.

Of minor extent in this unit are Datil soils on hills and Clovis soils on fan terraces and plains.

This unit is used for livestock grazing and wildlife habitat.

Areas of grassland in this unit provide habitat for wildlife such as pronghorn antelope, coyote, desert cottontail, spotted ground squirrel, Botta's pocket gopher, Gunnison's prairie dog, silky pocket mouse, horned lark, western meadowlark, lark bunting, loggerhead shrike, side-blotched lizard, and prairie rattlesnake.

Areas of pinyon and juniper provide habitat for mule deer, gray fox, porcupine, chipmunk, pinyon mouse, white-throated woodrat, pinyon and scrub jays, northern plateau lizard, and black-tailed rattlesnake.

4. Datil-Motoqua-Abrazo

Deep, shallow, and moderately deep soils; on mountains, hills, fan terraces, and bajadas

This map unit is in the western part of the survey area. Slope is mainly 0 to 25 percent, but minor components range to 60 percent. The present vegetation is grass and trees. Elevation is mainly 6,300 to 7,500 feet, but minor components range to 9,200 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

This unit makes up about 8 percent of the survey area. It is about 37 percent Datil and similar soils, 22 percent Motoqua and similar soils, and 16 percent Abrazo and similar soils. The remaining 25 percent is components of minor extent.

Datil soils are on fan terraces, bajadas, hills, and ridges. These soils are deep, well drained, and moderately permeable. They formed in alluvium. The surface layer is brown loam about 3 inches thick. The upper 4 inches of the subsoil is brown loam, and the lower 15 inches is brown gravelly clay loam. The upper 18 inches of the substratum is pinkish gray loam, and the lower part to a depth of 60 inches or more is pinkish gray gravelly sandy clay loam.

Motoqua soils are on mountains. These soils are shallow, well drained, and moderately slowly permeable. They formed in alluvium derived dominantly from tuff. Typically, the surface layer is brown very gravelly loam about 2 inches thick. The 4 inches of the subsoil is dark brown very cobbly loam about 4 inches thick, and the lower 6 inches is brown very cobbly clay loam about 6 inches thick. Hard rhyolitic tuff is at a depth of 12 inches.

Abrazo soils are on mountains and hills. These soils are moderately deep, well drained, and slowly permeable. They formed in alluvium and colluvium derived dominantly from tuff. The surface layer is dark brown gravelly sandy loam about 7 inches thick. The upper 13 inches of the subsoil is dark brown cobbly clay loam, and the lower 7 inches is strong brown very cobbly clay loam. Hard rhyolitic tuff is at a depth of 27 inches.

Of minor extent in this unit are Lapdun and Millett soils on fan terraces, Manzano soils in swales, and Haploborolls, aridic, on benches at higher elevations.

This unit is used for livestock grazing and wildlife habitat.

This unit supports a wildlife community that includes mule deer, gray fox, bobcat, porcupine, chipmunk, desert cottontail, pinyon mouse, white-throated woodrat, pinyon and scrub jays, ash-throated flycatcher, Cassin's kingbird, eastern fence lizard, short-horned lizard, and black-tailed rattlesnake.

Areas of riparian vegetation such as narrowleaf cottonwood, willow, and baccharis support large and diverse wildlife communities, particularly birds. In addition to those named above, it provides nesting, roosting, and loafing habitat for many species and migration routes for others.

Where associated with high cliffs and ledges or wooded areas, golden eagle, red-tailed hawk, and prairie falcon hunt over the unit, and deer, elk, and mountain lion range into it.

5. Augustine-Royosa-Telescope

Deep soils; on bajadas and plains

This map unit is on the Plains of San Agustin, in the west-central part of the survey area. Slope is 1 to 15 percent. The present vegetation is grass and areas of scattered trees. Elevation is 6,000 to 8,100 feet. The average annual precipitation is 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

This unit makes up about 5 percent of the survey area. It is about 40 percent Augustine and similar soils, 22 percent Royosa and similar soils, and 30 percent Telescope and similar soils. The remaining 8 percent is components of minor extent.

Augustine soils are on bajadas. These soils are deep, well drained, and moderately permeable. They formed in alluvium. Typically, the surface layer is brown fine sandy loam about 3 inches thick. The subsoil is brown clay loam about 34 inches thick. The substratum to a depth of 60 inches or more is pinkish gray clay loam.

Royosa soils are on stabilized sand dunes and hummocks on plains. These soils are deep, excessively drained, and very rapidly permeable. They formed in eolian deposits. Typically, the surface layer is brown sand about 7 inches thick. The underlying material to a depth of 60 inches or more is pale brown sand and coarse sand and brown loamy sand.

Telescope soils are on plains. These soils are deep, well drained, and moderately rapidly permeable. They formed in alluvium and eolian material. Typically, the surface layer is brown loamy fine sand about 3 inches thick. The subsoil is brown fine sandy loam about 16 inches thick. The upper 26 inches of the substratum is pinkish gray fine sandy loam, and the lower part to a depth of 60 inches or more is pinkish gray loamy fine sand.

Of minor extent in this unit are Landavaso and Datil soils on plains and fan terraces and Manzano soils in swales.

This unit is used for livestock grazing and wildlife habitat.

This unit provides habitat for wildlife such as pronghorn antelope, coyote, badger, black-tailed jackrabbit, thirteen-lined ground squirrel, banner-tailed kangaroo rat, Botta's pocket gopher, silky pocket mouse, western meadowlark, horned lark, lark bunting, western spadefoot toad, leopard lizard, and prairie rattlesnake.

Common ravens hunt over this unit, and marsh hawks winter on it. Where playas and potholes are present, killdeer nest, mourning dove water, and desert shrimp, annual freshwater clams, and tiger salamander are present in some areas.

Dry soils and Lava flows

This group consists of five map units. It makes up about 38 percent of the survey area. Slope generally is 0 to 50 percent, but minor components range to 70 percent. The present vegetation is grass and shrubs. Elevation is dominantly 4,400 to 6,250 feet, but minor components range to 7,250 feet. The average annual precipitation is 8 to 10 inches, the average annual air temperature is 59 to 65 degrees F, and the average frost-free period is 180 to 210 days.

The soils formed in alluvium, colluvium, and eolian material derived dominantly from volcanic rock, gypsum, limestone, and sandstone.

This group is used for irrigated crops, livestock grazing, urban development, and wildlife habitat.

6. Turney-Yesum-Wink

Deep soils; on fan terraces, bajadas, and plains

This map unit is in the central part of the survey area, east of the Rio Grande. Slope is dominantly 0 to 30 percent, but minor components range to 70 percent. The present vegetation is grass and shrubs. Elevation is dominantly 4,400 to 6,000 feet, but minor components range to 7,250 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 59 to 65 degrees F, and the average frost-free period is 180 to 210 days.

This unit makes up about 9 percent of the survey area. It is about 40 percent Turney and similar soils, 15 percent Yesum and similar soils, and 10 percent Wink and similar soils. The remaining 35 percent is components of minor extent.

Turney soils are on bajadas and plains. These soils are deep, well drained, and moderately permeable. They formed in alluvial and eolian material. Typically, the surface layer is pale brown loam about 4 inches thick. The upper 7 inches of the subsoil is reddish brown and brown loam and sandy clay loam, and the lower 9 inches is brown clay loam. The upper 6 inches of the substratum is light brown clay loam, and the lower part to a depth of 60 inches or more is pink and pinkish white loam.

Yesum soils are on bajadas, knolls, fan terraces, and basin floors. These soils are deep, well drained, and moderately permeable. They formed in alluvium derived dominantly from gypsum and eolian material. Typically, the surface layer is light brown loamy very fine sand about 1 inch thick. The upper 24 inches of the underlying material is white and pinkish white loam, the next 26 inches is pinkish gray and pink very fine sandy loam, and the lower part to a depth of 60 inches or more is pink fine sandy loam and very fine sandy loam.

Wink soils are on plains, bajadas, and fan terraces. These soils are deep, well drained, and moderately rapidly permeable. They formed in eolian material and alluvium. Typically, the surface layer is light brown fine sand about 2 inches thick. The subsoil is light brown sandy loam about 9 inches thick. The upper 26 inches of the substratum is light brown and pink sandy loam, and the lower part to a depth of 60 inches or more is pinkish white sandy loam.

Of minor extent in this unit are Bluepoint, Berino, and Pajarito soils that have slopes of 0 to 15 percent and are throughout the unit and Lozier soils on cuestas and hogbacks.

This unit is used for livestock grazing and wildlife habitat.

This unit provides habitat that supports wildlife such as coyote, desert cottontail, Merriam's kangaroo rat, white-throated woodrat, cactus mouse, golden eagle, Gambel's quail, crissal thrasher, black-throated sparrow, collared lizard, round-tailed horned lizard, striped whipsnake, and Couch's spadefoot toad.

Where large woody plants are present in sandy areas of the unit, white-necked raven and mourning dove nest. Where site deterioration has resulted in a dune-interdune aspect, accompanied by mesquite invasion, burrowing mammals and their predators, and shrub-dependent birds become dominant.

In areas of dense stands of large soaptree yucca, Scott's oriole nest and other birds perch and roost.

7. Bluepoint-Wink-Turney

Deep soils; on alluvial fans, bajadas, plains, and terraces

This map unit is in the central part of the survey area, adjacent to the Rio Grande. Slope is dominantly 0 to 30 percent, but minor components range to 50 percent. The present vegetation is grass and shrubs. Elevation is dominantly 4,400 to 6,000 feet, but minor components range to 7,250 feet. The average annual precipitation is 8 to 10 inches, the average annual air temperature is 59 to 65 degrees F, and the average frost-free period is 180 to 210 days.

This unit makes up about 8 percent of the survey area. It is about 30 percent Bluepoint and similar soils, 25 percent Wink and similar soils, and 15 percent Turney and similar soils. The remaining 30 percent is components of minor extent.

Bluepoint soils are on alluvial fans, plains, and terraces. These soils are deep, excessively drained, and rapidly permeable. They formed in alluvial and eolian material. Typically, the surface layer is light yellowish brown loamy fine sand about 5 inches thick. The upper 48 inches of the underlying material is light yellowish brown loamy fine sand, and the lower part to a depth of 60 inches or more is pink loamy sand.

Wink soils are on plains, bajadas, and fan terraces. These soils are deep, well drained, and moderately rapidly permeable. They formed in eolian and alluvial material. Typically, the surface layer is light brown fine sand about 2 inches thick. The subsoil is light brown sandy loam about 9 inches thick. The upper 26 inches of the substratum is light brown and pink sandy loam, and the lower part to a depth of 60 inches or more is pinkish white sandy loam.

Turney soils are on bajadas and plains. These soils are deep, well drained, and moderately slowly permeable. They formed in alluvial and eolian material. Typically, the surface layer is pale brown loam about 4 inches thick. The upper 7 inches of the subsoil is reddish brown and brown loam and sandy clay loam, and the lower 9 inches is brown clay loam. The upper 6 inches of the substratum is light brown clay loam, and the lower part to a depth of 60 inches or more is pink and pinkish white loam.

Of minor extent in this unit are areas of Berino and Pajarito soils that occur throughout the unit.

This unit is used for livestock grazing and wildlife habitat.

This unit provides habitat for wildlife such as coyote, desert cottontail, Merriam's kangaroo rat, white-throated woodrat, cactus mouse, golden eagle, Gambel's quail, crissal thrasher, black-throated sparrow, collared lizard, round-tailed horned lizard, striped whipsnake, and Couch's spadefoot toad.

Where large woody plants are present in sandy areas of the unit, white-necked raven and mourning dove nest. Where site deterioration has resulted in a dune-interdune aspect, accompanied by mesquite invasion, burrowing mammals and their predators and shrub-dependent birds become dominant.

8. Typic Ustifluvents-Gila-Armijo

Deep soils; on flood plains

This map unit is in the center of the survey area, on the flood plain of the Rio Grande. Slope is mainly 0 to 2 percent but ranges to 50 percent in areas of minor components. The vegetation is trees, irrigated crops, and grass. Elevation is 4,400 to 4,925 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 59 to 64 degrees F, and the average frost-free period is 180 to 210 days.

This unit makes up about 3 percent of the survey area. It is about 26 percent Typic Ustifluvents and similar soils, 20 percent Gila and similar soils, 19 percent Armijo and similar soils, and 10 percent Glendale and similar soils. The remaining 25 percent is components of minor extent.

Typic Ustifluvents are deep, somewhat poorly drained to well drained, and very rapidly permeable to very slowly permeable. They formed in alluvium. Typically, the surface layer is light brown fine sand about 2 inches thick. The upper 9 inches of the underlying material is brown clay and light brown silty clay loam, and the lower part to a depth of 60 inches or more is stratified, pink and light brown loam, fine sandy loam, and sand.

Gila soils are deep, well drained, and moderately permeable. They formed in alluvium. Typically, the surface layer is yellowish brown clay loam about 14 inches thick. The upper 10 inches of the underlying material is light yellowish brown silt loam, the next 5 inches is light yellowish brown sand, and the lower part to a depth of 60 inches or more is very pale brown silt loam and very fine sandy loam.

Armijo soils are deep, well drained, and very slowly permeable. They formed in alluvium. Typically, the surface layer is brown clay about 10 inches thick. The upper 34 inches of the underlying material is pinkish gray clay, and the lower part to a depth of 60 inches or more is light brown sandy clay loam.

Glendale soils are deep, well drained, and moderately slowly permeable. They formed in alluvium. Typically, the surface layer is brown clay loam about 19 inches thick. The underlying material to a depth of 60 inches or more is stratified, brown, light brown, and pink silty clay loam, clay loam, and loam.

Of minor extent in this unit are areas of Popotosa soils that occur throughout the unit and Urban land in the city of Socorro.

This unit is used for irrigated crops, wildlife habitat, pasture, and urban development.

This unit supports a wildlife community that includes desert mule deer, kit fox, desert cottontail, southern plains woodrat, spotted ground squirrel, Botta's pocket gopher, Swainson's hawk, vermillion flycatcher, western kingbird, mockingbird, plains spadefoot toad, tiger salamander, Rio Grande whiptail and round-tailed horned lizards, and western diamondback rattlesnake.

Areas of riparian vegetation in the Rio Grande Valley and its associated cropland provide habitat for a diverse wildlife community that includes nesting and migrating birds. The river provides habitat for waterfowl, shore and marsh birds, and other wetland wildlife.

9. Nickel-Caliza-Lozier

Deep, very shallow, and shallow soils; on bajadas, *cuestas, and fan terraces*

This map unit is in the central part of the survey area. Slope is 1 to 50 percent. The present vegetation is grass, shrubs, and scattered oneseed juniper at the higher elevations. Elevation is 4,400 to 6,250 feet, but minor components are at an elevation of as much as 7,250 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 59 to 65 degrees F, and the average frost-free period is 180 to 210 days.

This unit makes up about 15 percent of the survey area. It is about 50 percent Nickel and similar soils, 16 percent Caliza and similar soils, and 11 percent Lozier and similar soils. The remaining 23 percent is components of minor extent.

Nickel soils are on bajadas. These soils are deep, well drained, and moderately slowly permeable. They formed in alluvium. Typically, the surface layer is pinkish gray very gravelly sandy loam about 8 inches thick. The upper 46 inches of the underlying material is pinkish white and pink extremely gravelly sandy loam and very gravelly sandy loam, and the lower part to a depth of 60 inches or more is pink extremely gravelly loam.

Caliza soils are on bajadas and fan terraces. These soils are deep, well drained, and moderately rapidly permeable. They formed in alluvium and colluvium. Typically, the surface layer is brown very gravelly sandy loam about 3 inches thick. The upper 14 inches of the underlying material is pale brown very gravelly coarse sandy loam, and the lower part to a depth of 60 inches or more is pale brown extremely gravelly loamy coarse sand.

Lozier soils are on dip slopes on cuestas. These soils are very shallow and shallow, well drained, and moderately permeable. They formed in alluvium derived dominantly from limestone. Typically, the surface layer is yellowish brown very flaggy loam about 3 inches thick. The underlying material is pale brown and white very flaggy loam about 13 inches thick. Limestone is at a depth of 16 inches.

Of minor extent in this unit are Laborcita and Lemitar soils on hogbacks, cuestas, and hills and Typic Camborthids on bajadas and fan terraces.

This unit is used for livestock grazing and wildlife habitat.

This unit provides habitat for a characteristic wildlife community that includes desert mule deer, ringtail, desert cottontail, Texas antelope squirrel, rock pocket mouse, cactus mouse, white-throated woodrat, turkey vulture, cactus wren, curve-billed thrasher, blue gray gnatcatcher, brown towhee, rufous-crowned sparrow, rock rattlesnake, mountain patchnose snake, canyon treefrog, red-spotted toad, long-tailed brush lizard, and collared lizard.

Where high cliffs and ledges are present, golden eagle, great horned owl, and prairie falcon perch to hunt over the surrounding terrain.

10. Akela-Lava flows-Armendaris

Very shallow, shallow, and deep soils, and Lava flows; on foot slopes and in swales

This map unit is in the southern part of the survey area, east of the Rio Grande. Slope is 1 to 30 percent. The present vegetation is grass. Elevation is 4,400 to 5,600 feet. The average annual precipitation is 8 to 10 inches, the average annual air temperature is 59 to 64 degrees F, and the average frost-free period is 180 to 210 days.

This unit makes up about 3 percent of the survey area. It is about 37 percent Akela and similar soils, 22 percent Lava flows, and 19 percent Armendaris and similar soils. The remaining 22 percent is components of minor extent.

Akela soils are on foot slopes below Lava flows. These soils are very shallow and shallow, well drained, and moderately permeable. They formed in alluvium derived from basalt and eolian sediment. Typically, the surface layer is brown very gravelly loam about 3 inches thick. The upper part of the underlying material is light brown very gravelly loam about 3 inches thick, and the lower part to a depth of 12 inches is light brown extremely cobbly loam. Basalt is at a depth of 12 inches.

Lava flows consists of areas of exposed basalt.

Armendaris soils are in circular swales or depressional areas surrounded by Lava flows. These soils are deep, well drained, and slowly permeable. They formed in alluvium. Typically, the surface layer is light yellowish brown silt loam about 2 inches thick. The subsoil is light brown, dark brown, and brown silty clay loam and silty clay about 39 inches thick. The substratum to a depth of 60 inches or more is light brown and brown silty clay loam.

Of minor extent in this unit are Berino and Wink soils on plains.

This unit is used for livestock grazing and wildlife habitat.

The shrub-grassland part of this unit provides habitat for a characteristic wildlife community that includes pronghorn antelope, badger, kit fox, desert cottontail, spotted ground squirrel, desert pocket gopher, Ord's kangaroo rat, southern plains woodrat, western meadowlark, scaled quail, roadrunner, burrowing owl, New Mexico whiptail lizard, round-tailed horned lizard, and Couch's spadefoot toad.

Where large woody shrubs are present, this unit is a breeding area for Swaison's hawk, mockingbird, mourning dove, and white-necked raven. Where site deterioration has resulted in a coppice dune-interdune aspect, burrowing mammals and their predators and shrub-dependent birds become dominant.

The areas of Lava flows in this unit provide habitat for a characteristic wildlife community that includes coyote, desert cottontail, rock squirrel, Merriam's kangaroo rat, white-throated woodrat, cactus mouse, rock pocketmouse, cactus wren, curve-billed thrasher, black-throated sparrow, scaled quail, western diamondback rattlesnake, collard lizard, and red-spotted toad.

Moist soils

This group consists of three map units. It makes up about 26 percent of the survey area. Slope generally is 0 to 35 percent, but minor components have slope of as much as 80 percent. The present vegetation is grass and trees. Elevation is 5,200 to 7,500 feet. The average annual precipitation is 10 to 15 inches, the average annual air temperature is 50 to 58 degrees F, and the average frost-free period is 140 to 180 days.

The soils in this group formed in alluvial, colluvial, eolian, and residual material derived dominantly from limestone, gypsum, and basalt.

This group is used for livestock grazing and wildlife habitat.

11. Harvey-Pirodel-Pinon

Deep, very shallow, and shallow soils on fan terraces, cuestas, mesas, bajadas, and plains

This map unit is in the northeastern part of the survey area. Slope is mainly 0 to 25 percent, but minor components range to 35 percent. The present vegetation is grass and areas of scattered trees. Elevation is 5,300 to 7,100 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 150 to 170 days.

This unit makes up about 7 percent of the survey area. It is about 44 percent Harvey and similar soils, 23 percent Pirodel and similar soils, and 9 percent Pinon and similar soils. The remaining 24 percent is components of minor extent.

Harvey soils are on bajadas, fan terraces, and plains. These soils are deep, well drained, and moderately permeable. They formed in alluvium. Typically, the surface layer is dark yellowish brown fine sandy loam about 3 inches thick. The upper 9 inches of the subsoil is dark yellowish brown fine sandy loam, and the lower 19 inches is light brown and pinkish gray sandy clay loam. The substratum to a depth of 60 inches or more is light brown gravelly sandy clay loam.

Pirodel soils are on fan terraces and plains. These soils are deep, well drained, and moderately rapidly permeable. They formed in eolian and alluvial material. Typically, the surface layer is light brown fine sand about 2 inches thick. The subsoil is brown fine sand about 27 inches thick. The buried soil to a depth of 60 inches or more is pink gravelly sandy loam, gravelly loam, and sandy loam.

Pinon soils are on cuestas, mesas, and knolls. These soils are very shallow and shallow, well drained, and moderately slowly permeable. They formed in alluvium derived dominantly from limestone. Typically, the surface layer is dark brown channery fine sandy loam about 3 inches thick. The upper 9 inches of the subsoil is brown channery loam, and the lower 6 inches is light gray channery loam. Limestone is at a depth of 18 inches.

Of minor extent in this unit are Dean soils on fan terraces, Tanbark soils on hills, knolls, and ridges, and Penistaja soils on plains and fan terraces.

This unit is used for livestock grazing and wildlife habitat.

This unit supports a characteristic wildlife community that is typical of that of undulating grasslands characterized by scattered pinyon and juniper. It includes pronghorn antelope, mule deer, coyote, gray fox, black-tailed jackrabbit, ferruginous hawk, common raven, scaled quail, mourning dove, Cassin's kingbird, scrub jay, horned lark, western meadowlark, plains spadefoot toad, short-horned lizard, and prairie rattlesnake.

This unit appears to harbor high density populations of burrowing rodents and as a result attracts a large population of predators.

12. Harvey-Winona-Netoma

Deep, very shallow and shallow soils; on bajadas, fan terraces, hills, plains, and cuestas

This map unit is in the eastern third of the survey area. Slope is dominantly 1 to 30 percent, but minor components range to 80 percent. The present vegetation is grass and areas of scattered trees. Elevation is dominantly 5,200 to 6,600 feet, but minor components are as much as 7,500 feet. The average annual precipitation is about 10 to 15 inches, the average annual air temperature is 50 to 58 degrees F, and the average frost-free period is 140 to 180 days.

This unit makes up about 11 percent of the survey area. It is about 35 percent Harvey and similar soils, 31 percent Winona and similar soils, and 11 percent Netoma and similar soils. The remaining 23 percent is components of minor extent.

Harvey soils are on bajadas, fan terraces, and plains. These soils are deep, well drained, and moderately permeable. They formed in alluvium. Typically, the surface layer is dark yellowish brown fine sandy loam about 3 inches thick. The upper 9 inches of the subsoil is dark yellowish brown fine sandy loam, and the lower 19 inches is light brown and pinkish gray sandy clay loam. The substratum to a depth of 60 inches or more is light brown gravelly sandy clay loam.

Winona soils are on cuestas and hills. These soils are very shallow and shallow, well drained, and moderately permeable. They formed in alluvium derived dominantly from limestone. Typically, the surface layer is brown very flaggy loam about 2 inches thick. The upper 6 inches of the underlying material is brown very cobbly loam, and the lower part to a depth of 17 inches is light brown very gravelly loam. Limestone is at a depth of 17 inches.

Netoma soils are on knolls and fan terraces. These soils are deep, well drained, and moderately permeable. They formed in alluvium derived dominantly from gypsum. Typically, the surface layer is very pale brown loam about 2 inches thick. The upper 7 inches of the subsoil is white silt loam, and the lower 10 inches is white loam. The upper 12 inches of the substratum is very pale brown silt loam, and the lower part to a depth of 60 inches or more is very pale brown loam.

Of minor extent in this unit are Tanbark, La Fonda, and Clovis soils throughout the unit.

This unit is used for livestock grazing and wildlife habitat.

This unit supports a characteristic wildlife community that includes mule deer, bobcat, kit fox, ringtail, desert cottontail, rock squirrel, white-throated woodrat, Merriam's kangaroo rat, pinyon mouse, golden eagle, prairie falcon, Swainson's hawk, roadrunner, scrub jay, Cassin's kingbird, scaled quail, white-throated swift, red-spotted toad, round-tailed horned lizard, mountain patchnose snake, and prairie rattlesnake.

13. Tanbark-Harvey-Cuate

Very shallow to deep soils; on bajadas, fan terraces, plains, and hills

This map unit is in the southeastern part of the survey area, along the Lincoln County line. Slope is mainly 0 to 35 percent, but minor components have slope of as much as 80 percent. The present vegetation is grass and areas of grass and trees. Elevation is 5,300 to 7,200 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 58 degrees F, and the average frost-free period is 150 to 180 days.

This unit makes up about 8 percent of the survey area. It is about 27 percent Tanbark and similar soils, 21 percent Harvey and similar soils, and 19 percent Cuate and similar soils. The remaining 33 percent is components of minor extent.

Tanbark soils are on side slopes of bajadas, knolls, and ridges. These soils are very shallow and shallow, well drained, and moderately permeable. They formed in alluvium derived dominantly from gypsum. Typically, the surface layer is pale brown silt loam about 2 inches thick. The underlying material is very pale brown silt loam about 11 inches thick. Weathered gypsum is at a depth of 13 inches.

Harvey soils are on bajadas, fan terraces, and plains. These soils are deep, well drained, and moderately permeable. They formed in alluvium. Typically, the surface layer is dark yellowish brown fine sandy loam about 3 inches thick. The upper 9 inches of the subsoil is dark yellowish brown fine sandy loam, and the lower 19 inches is light brown and pinkish gray sandy clay loam. The substratum to a depth of 60 inches or more is light brown gravelly sandy clay loam.

Cuate soils are on tops and upper side slopes of hills. These soils are moderately deep, well drained, and moderately permeable. They formed in residuum and colluvium derived dominantly from limestone. Typically, the surface layer is dark brown very channery loam about 1 inch thick. The subsoil is dark brown and pale brown very channery loam about 22 inches thick. The substratum is white very channery sandy loam about 9 inches thick. Limestone is at a depth of 32 inches.

Of minor extent in this unit are Deama soils on hills, Calabasas soils in swales, Rock outcrop on escarpments and hills and in canyons, and Socorro soils on lava flows.

This unit is used for livestock grazing and wildlife habitat.

This unit supports a characteristic wildlife community that is typical of undulating grasslands and hills with scattered pinyon-juniper communities. It includes mule deer, coyote, gray fox, black-tailed jackrabbit, white-throated woodrat, pinyon mouse, red-tailed hawk, common raven, roadrunner, scaled quail, mourning dove, Cassin's kingbird, scrub jay, horned lark, western meadowlark, plains spadefoot toad, short-horned lizard, and prairie rattlesnake.

This unit appears to harbor high density populations of burrowing rodents and, as a result, attracts high density populations of predators, primarily on the gypsiferous Tanbark soils.

Detailed Soil Map Units

The map units delineated on the detailed 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 maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit is given under "Use and Management of the Soils."

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 or miscellaneous areas. 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.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavior divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they 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 soils and miscellaneous areas on the landscape.

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 to precisely define and locate the soils and miscellaneous areas is needed.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying layers, all 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 surface 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, Armijo clay, 0 to 1 percent slopes, is one of several phases in the Armijo series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are 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. Anthony-Gila complex, 0 to 2 percent slopes, 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. Netoma-Claunch association, 2 to 10 percent slopes, is an example.

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

This survey was mapped at two levels of detail. At the most detailed level, map units are narrowly defined. This means that map unit boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map units are broadly defined. Boundaries were plotted and verified at wider intervals. The narrowly defined units are indicated by an asterisk in the map legend. 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 2 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

Map Unit Descriptions

11—Armijo clay, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 125 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown clay about 10 inches thick. The upper 34 inches of the underlying material is pinkish gray clay, and the lower part to a depth of 60 inches or more is light brown sandy clay loam.

Included in this unit are small areas of Armijo soils that are subject to flooding and Saneli and Glendale soils throughout the unit. Included areas make up about 25 percent of the total acreage.

Permeability of this Armijo soil is very slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is moderately saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is poorly suited to use as irrigated cropland. The main limitations are very slow permeability, slow water intake rate, moderate salinity, and poor tilth. Tillage methods should not include operations that turn the soil over, which brings leached salts to the surface. Chiseling and disking are more effective alternatives. The rotation should include high residue, salt tolerant crops such as small grain. Grasses and legumes, with their well developed root systems, improve the physical condition of the soil and enhance the leaching of soluble salts when used in a crop rotation. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pasture. Improved grass species are productive when fertilized and properly managed.

This unit is poorly suited to use as hayland. Alfalfa hay is easily drowned if irrigation water is not properly managed.

This unit is poorly suited to urban development. The main limitations are high shrink-swell potential and high salt content.

In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

14—Saneli clay, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 10 to 100 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 10 to 12 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown and light brown clay about 9 inches thick. The upper 20 inches of the underlying material is light brown clay, the next 4 inches is very pale brown loamy sand, and the lower part to a depth of 60 inches or more is very pale brown sand.

Included in this unit are small areas of Armijo and Popotasa soils throughout the unit. Included areas make up about 30 percent of the total acreage.

Permeability of this Sanelli soil is very slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is poorly suited to use as irrigated cropland. The main limitations are very slow permeability, very slow water intake rate, slight salinity, and poor tilth. Tillage methods should not include operations that turn the soil over, which brings leached salts to the surface. Chiseling and disking are more effective alternatives. The rotation should include high residue, salt tolerant crops such as small grain. Grasses and legumes, with their well developed root systems, improve the physical condition of the soil and enhance the leaching of soluble salts when used in a crop rotation. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pasture. Improved grass species are productive when fertilized and properly managed.

This unit is poorly suited to use as hayland. Alfalfa hay is easily drowned if irrigation water is not properly managed.

This unit is poorly suited to urban development. The main limitation is high shrink-swell potential.

In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

22—Glendale clay loam, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 10 to 100 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown clay loam about 19 inches thick. The underlying material to a depth of 60 inches or more is stratified, brown, light brown, and pink silt loam, clay loam, or loam.

Included in this unit are small areas of Armijo soils, Anthony Variant soils, and Glendale sandy loam. Included areas make up about 25 percent of the total acreage.

Permeability of this Glendale soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is well suited to use as irrigated cropland. The main limitations are moderately slow permeability, moderately slow water intake rate, slight salinity, and poor tilth. Tillage operations should not include those that turn the soil over and thus bring leached salts to the surface. Chiseling and disking are more effective alternatives. The cropping system should include high residue crops, grasses, and legumes to compensate for the soil depleting effects of crops such as chili, cotton, and other row crops. Grasses and legumes, with their well developed root systems, improve the tilth of the soil and facilitate the leaching of soluble salts. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pastureland and hayland. Cool season and warm season grasses are productive if fertilized and otherwise properly managed. Alfalfa does well when harvested at the proper stage of growth and when managed to encourage a healthy root system.

This unit is suited to urban development. The main limitations are the clayey texture of the soil and shrink-swell potential. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

26—Popotosa clay loam, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 10 to 65 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is light brown clay loam about 11 inches thick. The upper 18 inches of the underlying material is light brown loam and clay loam, and the lower part to a depth of 60 inches or more is pale brown sand.

Included in this unit are small areas of Glendale and other Popotosa. Included areas make up about 25 percent of the total acreage.

Permeability of this Potosa soil is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is well suited to use as irrigated cropland. The main limitations are moderately slow permeability, moderately slow water intake rate, slight salinity, and poor tilth. Tillage operations should not include those that turn the soil over and thus bring leached salts to the surface. Chiseling and disking are more effective alternatives. The cropping system should include high residue crops, grasses, and legumes to compensate for the soil depleting effects of crops such as cotton, chili, and other vegetables. Grasses and legumes, with their well developed root systems, improve the tilth of the soil and facilitate the leaching of soluble salts. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pastureland and hayland. Cool season and warm season grasses are productive when fertilized and otherwise properly managed. Alfalfa does well when harvested at the proper stage of growth and if managed to encourage a healthy root system.

This unit is suited to urban development. The main limitations are the clayey texture of the soil and shrink-swell potential. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

32—Gila clay loam, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 65 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is yellowish brown clay loam about 14 inches thick. The upper 10 inches of the underlying material is light yellowish brown silt loam, the next 5 inches is light yellowish brown sand, and the lower part to a depth of 60 inches or more is very pale brown silt loam and very fine sandy loam.

Included in this unit are small areas of Glendale and other Gila soils that are in areas throughout the unit. Included areas make up about 25 percent of the total acreage.

Permeability of this Gila soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is well suited to use as irrigated cropland. The main limitations are moderately slow water intake rate, slight salinity, and poor tilth. Tillage methods should not include operations that turn the soil over, which brings leached salts to the surface. Chiseling and disking are more effective alternatives. The rotation should include high residue crops, grasses, and legumes to offset the soil depleting effects of crops such as chili, cotton, and other row crops. Grasses and legumes, with their well developed root systems, improve the physical condition of the soil and enhance the leaching of soluble salts. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pastureland and hayland. Cool season and warm season grasses are productive when fertilized and properly managed. Alfalfa does well when harvested at the proper stage of growth and when managed to produce a healthy root system.

In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

37—Agua clay loam, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 75 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is pale brown clay loam about 8 inches thick. The upper 10 inches of the underlying material is very pale brown silt loam, the next 5 inches is very pale brown very fine sandy loam, and the lower part to a depth of 60 inches or more is pale brown fine sand.

Included in this unit are small areas of Popotosa, Gila, and other Agua soils throughout the unit. Included areas make up about 25 percent of the total acreage.

Permeability of this Aqua soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is well suited to use as irrigated cropland. The main limitations are moderately slow water intake rate, slight salinity, and poor tilth. Tillage methods should not include operations that turn the soil over, which brings leached salts to the surface. Chiseling and disking are more effective alternatives. The rotation should include high residue crops, grasses, and legumes to offset the soil depleting effects of crops such as cotton, chili, and other vegetables. Grasses and legumes, with their well developed root systems, improve the physical condition of the soil and enhance the leaching of soluble salts. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pastureland and hayland. Cool season and warm season grasses are productive when fertilized and properly managed. Alfalfa does well when harvested at the proper stage of growth and when managed to produce a healthy root system.

This unit is suited to urban development. The main limitations is seepage. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

44—Anthony sandy loam, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 125 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is light brown sandy loam about 12 inches thick. The upper 26 inches of the underlying material is light yellowish brown loamy very fine sand, and the lower part to a depth of 60 inches or more is light yellowish brown, very pale brown, and pale brown silt loam and fine sand.

Included in this unit are small areas of Gila, Anthony Variant, and other Anthony soils. Included areas make up about 20 percent of the total acreage.

Permeability of this Anthony soil is moderately. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This unit is slightly saline. A seasonal water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is poorly suited to use as irrigated cropland. The main limitations are moderate available water capacity, moderately rapid water intake rate, hazard of soil blowing, slight salinity, and poor tilth. Growing cover crops, stripcropping, and including grasses and legumes in a rotation help to protect the soil. Stubble and other crop residue should be managed to provide protection from soil blowing in spring. Irrigation water should be applied in light and frequent applications to offset the low available water capacity. Mulching with manure is an effective method of improving available water capacity and tilth and increasing fertility. In order to avoid loss of water by deep percolation, irrigation water should be applied at high rates using short runs. Water soluble fertilizer should be applied in several light applications to maintain a high fertility level.

This unit is well suited to use as irrigated pastureland and hayland. Cool season and warm season grasses are productive when fertilized and properly managed. Alfalfa does well when harvested at the proper stage of growth and when managed to produce a healthy root system.

This unit is moderately well suited to urban development. The main limitations are seepage and low soil strength. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

48—Anthony Variant sandy clay loam, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 25 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown sandy clay loam about 10 inches thick. The upper 15 inches of the underlying material is light brown loamy very fine sand, the next 12 inches is brown clay, and the lower part to a depth of 60 inches or more is pink sand.

Included in this unit are small areas of Glendale and Anthony soils throughout the unit. Included areas make up about 25 percent of the total acreage.

Permeability of this Anthony Variant soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is moderately saline. A seasonal high water table fluctuates between depths of 0 to 25 inches and 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is suited to use as irrigated cropland. The main limitations are slow permeability, the high water table, slight salinity, and poor tilth. Overirrigation should be avoided to prevent raising of the water table.Tillage methods should not include operations that turn the soil over, which brings leached salts to the surface. Chiseling and disking are more effective alternatives. The rotation should include high residue crops, grasses, and legumes to offset the soil depleting effects of crops such as cotton, chili, and other vegetables. Grasses and legumes, with their well developed root systems, improve the tilth and enhance the leaching of soluble salts. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pastureland and hayland. Cool season and warm season grasses are productive when fertilized and properly managed. Alfalfa does well when harvested at the proper stage of growth and when managed to produce a healthy root system.

This unit is poorly suited to urban development. Drainage should be provided for buildings with basements and crawl spaces. Plants that tolerate a seasonal high water table and droughtiness should be selected unless drainage and irrigation are provided.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

50—Brazito fine sandy loam, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 60 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown fine sandy loam about 10 inches thick. The upper 6 inches of the underlying material is light yellowish brown loamy fine sand, and the lower part to a depth of 60 or more inches is very pale brown coarse sand.

Included in this unit are small areas of Saneli and Agua soils throughout the unit. Included areas make up about 25 percent of the total acreage.

Permeability of this Brazito soil is rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September

This unit is used for irrigated crops and urban development.

This unit is poorly suited to use as irrigated cropland. The main limitations are low available water capacity, moderately rapid water intake rate, a hazard of soil blowing, slight salinity, and poor tilth. Growing cover crops, stripcropping, and including grasses and legumes in the cropping system help to protect the soil. Stubble and other crop residue should be managed to provide protection from soil blowing in spring. Irrigation water should be applied in light and frequent applications to compensate for the limitation of very low available water capacity. Mulching with manure is an effective method of improving the available water capacity and tilth and increasing fertility. In order to avoid loss of water by deep percolation, irrigation water should be applied at high rates using short runs. Water soluble fertilizer should be applied in several light applications to maintain a high fertility level.

This unit is well suited to use as irrigated pastureland and hayland. Cool season and warm season grasses are productive when fertilized and otherwise properly managed. Alfalfa does well when harvested at the proper stage of growth and if managed to encourage a healthy root system.

This unit is suited to urban development. Cutbanks are not stable and are subject to slumping. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

52—Saneli clay, thin surface, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 60 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is dark brown clay about 15 inches thick. The upper 38 inches of the underlying material is very pale brown fine sand, and the lower part to a depth of 60 inches or more is very pale brown sand.

Included in this unit are small areas of Brazito soils throughout the unit. Included areas make up about 20 percent of the total acreage.

Permeability of this Saneli soil is very slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This unit is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is poorly suited to use as irrigated cropland. The main limitations are very slow permeability, very slow water intake rate, low available water capacity, slight salinity, and poor tilth. The rotation should include high residue crops and grasses and legumes to offset the depleting effects of crops such as cotton, chili, and other vegetables. Grasses and legumes, with their well developed root systems, improve the physical condition of the soil and enhance the leaching of soluble salts. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas. Irrigation water should be applied in light and frequent applications to offset the effects of low available water capacity. The shallow depth to sand limits the selection of field crops, fruit, and nuts. Deep leveling cuts may expose the sand substratum.

This unit is suited to use as irrigated pastureland and hayland. Cool season and warm season grasses are productive when fertilized and properly managed. Alfalfa does well when harvested at the proper stage of growth and when managed to produce a healthy root system.

If the Saneli soil is used for urban development, the main limitations are high shrink-swell potential and unstable cutbanks. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

60—Typic Ustifluvents, 0 to 2 percent slopes. These deep, somewhat poorly drained to well drained soils are on flood plains. They formed in recent alluvium. Areas are irregular in shape and are 230 to 3,475 acres in size. The present vegetation is trees and grass. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

No single profile of Typic Ustifluvents is typical, but one commonly observed in the survey area has a surface layer of light brown fine sand about 2 inches thick. The upper 9 inches of the underlying material is light brown and brown clay and silty clay loam, and the lower part to a depth of 60 inches or more is stratified, brown and light brown loam, fine sandy loam, and sand.

Included in this unit are small areas of Brazito soils on dunes and Armijo soils in depressional areas and water channels. Included areas make up about 10 percent of the total acreage.

Permeability of these Typic Ustifluvents is very rapid to very slow. Available water capacity is very low to high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high. These soils are subject to frequent periods of flooding.

This unit is used as wildlife habitat.

111—Armijo-Urban land complex, 0 to 1 percent slopes. This map unit is on the Rio Grande flood plain within the city of Socorro. Areas are irregular in shape and are 50 to 300 acres in size. The present vegetation is grass, forbs, and scattered trees. Elevation is 4,590 to 4,620 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 50 percent Armijo silty clay, 0 to 1 percent slopes, and 30 percent Urban land. The Armijo soil is in areas of vacant lots, abandoned farmland, backyards, and lawns. Urban land is areas covered by streets, parking lots, and buildings. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Saneli, Belen, and Glendale soils and soils that are similar to the Armijo soil but have coarse textured strata between depths of 40 and 60 inches and areas of Armijo silty clay that are subject to ponding of runoff water following convective storms. Included areas are throughout the unit. Included areas make up about 20 percent of the total acreage.

The Armijo soil is deep and well drained. It formed in recent alluvium. Typically, the surface layer is dark brown silty clay about 2 inches thick. The upper 23 inches of the underlying material is brown silty clay, the next 13 inches is brown clay, and the lower part to a depth of 60 inches or more is brown silty clay.

Permeability of the Armijo soil is very slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is none. The hazard of soil blowing is high. This soil is moderately saline. This soil is subject to rare periods of flooding and ponding.

Urban land is land covered by streets, parking lots, buildings, and other residential and commercial structures. There is little if any vegetation in these areas. Surface runoff is rapid.

This unit is used for urban development and recreation.

This unit is poorly suited to urban development. The main limitations are high shrink-swell potential and high salt content. Buildings and roads should be designed to offset the effects of shrinking and swelling. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

114—Saneli-Urban land complex, 0 to 1 percent slopes. This map unit is on the Rio Grande flood plain within the city of Socorro. Areas are irregular in shape and are 50 to 200 acres in size. The present vegetation is grass, forbs, and scattered trees. Elevation is 4,590 to 4,620 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 40 percent Saneli silty clay, 0 to 1 percent slopes, and 35 percent Urban land. The Saneli soil is in areas of vacant lots, abandoned farmland, pastures, backyards, and lawns. Urban land is in areas covered by streets, parking lots, and buildings. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Belen and Armijo soils, Saneli soils that have a thin surface layer, Popotosa soils, soils that are similar to the Saneli soil but have clayey strata between depths of 40 and 60 inches, and areas of Saneli silty clay that are subject to ponding of runoff water following convective storms. Included areas are throughout the unit. Included areas make up about 25 percent of the total acreage.

The Saneli soil is deep and well drained. It formed in recent alluvium. Typically, the surface layer is brown silty clay about 2 inches thick. The upper 21 inches of the underlying material is brown silty clay and clay, the next 10 inches is brown loamy fine sand, and the lower part to a depth of 60 inches or more is light brown and pink fine sand and sand.

Permeability of the Saneli soil is very slow. Available water capacity is low. Effective rooting depth is to 60 inches or more. Runoff is very slow, and there is no hazard of water erosion. The hazard of soil blowing is high. This soil is subject to rare periods of flooding and ponding. It is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June and September.

Urban land is land covered by streets, parking lots, buildings, and other residential and commercial structures. There is little if any vegetation in these areas. Surface runoff is rapid.

This unit is used for urban development and recreation.

This unit is poorly suited to urban development. The main limitation is high shrink-swell potential. Buildings and roads should be designed to offset the effects of shrinking and swelling. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

116—Caliza Variant-Urban land complex, 1 to 5 percent slopes. This map unit is on alluvial fans and arroyo flood plains. Areas are irregular in shape and are 10 to 300 acres in size. The present vegetation is shrubs and grass. Elevation is 4,600 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 45 percent Caliza Variant gravelly loamy sand and 30 percent Urban land. The Caliza Variant soil is in swales and in areas of vacant lots and other undeveloped areas. Urban land is in areas covered by streets, parking lots, and buildings. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Armijo and Glendale soils adjacent to the Rio Grande flood plain, Arizo soils in old arroyo channels, Berino loamy fine sand, and soils that are similar to Adelino Variant and Caliza Variant soils but have a well developed subsoil and are throughout the unit. Included areas make up about 25 percent of the total acreage.

The Caliza Variant soil is deep and well drained. It formed in alluvium derived dominantly from river deposits and rhyolite. Typically, the surface layer is brown gravelly loamy sand about 2 inches thick. The upper 3 inches of the subsoil is brown sandy loam, and the lower 23 inches is brown and light brown gravelly sandy clay loam and sandy clay loam. The substratum to a depth of 60 inches or more is light brown very gravelly coarse sand and very gravelly loamy sand.

Permeability of the Caliza Variant soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high. This soil is subject to rare periods of flooding.

Urban land is land covered by streets, parking lots, buildings, and other residential and commercial structures. Little if any vegetation is in these areas. Surface runoff is rapid.

This unit is used as homesites, urban development, and recreation.

This unit is well suited to urban development. Removal of pebbles and cobbles in disturbed areas is needed for best results when landscaping, particularly in areas used for lawns. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

118—Arizo very stony loamy sand, 1 to 3 percent slopes. This deep, well drained soil is on small flood plains and terminal alluvial fans associated with ephemeral streams. It formed in gravelly alluvium derived dominantly from rhyolite and recent alluvium. Areas are long and narrow and are 10 to 100 acres in size. The present vegetation is shrubs and forbs. Elevation is

4,500 to 4,900 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown very stony loamy sand about 3 inches thick. The upper 6 inches of the underlying material is brown very gravelly loamy coarse sand, and the lower part to a depth of 60 inches or more is light brown very gravelly coarse sand.

Included in this unit are small areas of Anthony and Caliza Variant soils that occur throughout the unit, Riverwash in active arroyos, Urban land in areas within the city of Socorro, and Arizo soils that are suject to rare periods flooding and are throughout the unit. Included areas make up about 20 percent of the total acreage.

Permeability of this Arizo soil is very rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is none. The hazard of soil blowing is high. The Arizo soil is subject to occasional, very brief periods of flooding following storms in summer.

This unit is used as homesites and as a source of gravel and sand.

This unit is poorly suited to urban development.

The main limitation is occasional periods of flooding. Flooding can be controlled only by use of major flood control structures. Removal of pebbles and cobbles in disturbed areas is needed for best results when landscaping, particularly in areas used for lawns. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

120—Adelino Variant-Caliza very stony sandy loams, 15 to 50 percent slopes. This map unit is on dissected fan terraces. Areas are generally long and narrow and are 10 to 100 acres in size. The present vegetation is grass and shrubs. Elevation is 4,600 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 50 percent Adelino Variant very stony sandy loam and 30 percent Caliza very stony sandy loam. The Adelino Variant soil is on toe slopes and foot slopes, and the Caliza soil is on shoulders and back slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Caliza and Nickel soils that have a very gravelly or very cobbly sandy loam surface layer and are throughout the unit, Turney soils that have slopes of 5 to 15 percent, Caliza soils that have slopes of 50 to 60 percent, and soils that are similar to the Adelino Variant soil but are more than 35 percent rock fragments and occur throughout the unit. Included areas make up about 20 percent of the total acreage.

The Adelino Variant soil is deep and well drained. It formed in colluvium and alluvium derived dominantly from old river deposits and rhyolite. Typically, the surface layer is brown very stony sandy loam about 4 inches thick. The upper 7 inches of the subsoil is brown gravelly sandy clay loam, and the lower 43 inches is light brown gravelly sandy clay loam. The substratum to a depth of 60 inches or more is light brown gravelly fine sandy loam.

Permeability of the Adelino Variant soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Caliza soil is deep and well drained. It formed in colluvium and alluvium derived dominantly from rhyolite. Typically, the surface layer is brown very stony sandy loam about 4 inches thick. The subsurface layer is brown very gravelly sandy clay loam about 4 inches thick. The upper 9 inches of the underlying material is pink very gravelly loamy coarse sand, the next 30 inches is light brown extremely gravelly coarse sand, and the lower part to a depth of 60 inches or more is brown extremely cobbly coarse sand.

Permeability of the Caliza soil is moderately rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

This unit is used as homesites, for recreation, and as a source of sand and gravel.

If this unit is used for urban development, the main limitations are slope and large stones. Erosion is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed.

122—Glendale sandy loam, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 20 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is light brown sandy loam about 8 inches thick. The upper 42 inches of the underlying material is brown clay loam, and the lower part to a depth of 60 inches or more is stratified, light brown sandy loam to clay loam.

Included in this unit are small areas of Popotosa and Glendale other soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Glendale soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is well suited to use as irrigated cropland. The main limitations are moderately slow permeability, a hazard of soil blowing, slight salinity, and poor tilth. Growing cover crops, stripcropping, and including grasses and legumes in the cropping system help to protect the soil. Stubble and other crop residue should be managed to provide protection from soil blowing. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areass.

This unit is well suited to use as irrigated pastureland and hayland. Cool season and warm season grasses are productive when fertilized and otherwise properly managed. Alfalfa does well when harvested at the proper stage of growth and if managed to encourage a healthy root system.

This unit is suited to urban development. The main limitation is shrink-swell potential. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

124—Caliza very gravelly sandy loam, 1 to 7 percent slopes. This deep, well drained soil is on bajadas, fan terraces, and stream terraces. It formed in alluvium derived dominantly from rhyolite. Areas are irregular in shape and are 10 to 100 acres in size. The present vegetation is grass and shrubs. Elevation is 4,600 to 4,900 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is light brown very gravelly sandy loam about 4 inches thick. The upper 18 inches of the underlying material is light brown very gravelly coarse sandy loam, the next 29 inches is brown and light brown extremely gravelly coarse sand and extremely gravelly loamy coarse sand, and the lower part to a depth of 60 inches or more is brown extremely cobbly coarse sand.

Included in this unit are small areas of Turney Variant gravelly sandy loam, Nickel very gravelly sandy loam, Nolam very gravelly sandy loam, soils that are similar in texture to Nickel very gravelly sandy loam and are shallow and moderately deep to indurated caliche, and Caliza soils that have a stony sandy loam surface layer. Included soils make up about 25 percent of the total acreage.

Permeability of this Caliza soil is moderately rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

This unit is used as homesites, for urban development, and as a source of sand and gravel.

This unit is well suited to urban development. Removal of pebbles and cobbles in disturbed areas is needed for best results when landscaping, particularly in areas used for lawns. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

128—Turney Variant gravelly sandy loam, 1 to 7 percent slopes. This deep, well drained soil is on bajadas and fan terraces. It formed in alluvium derived dominantly from rhyolite and river deposits. Areas are irregular in shape and are 10 to 150 acres in size. The present vegetation is shrubs and grasses. Elevation is 4,650 to 4,925 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is light brown gravelly sandy loam about 2 inches thick. The subsoil is light brown and pink gravelly sandy clay loam and gravelly loam about 12 inches thick. The upper 21 inches of the substratum is pinkish white and pink gravelly loam and gravelly sandy clay loam, and the lower part to a depth of 60 inches or more is light brown and pink gravelly sandy loam and very gravelly loamy sand.

Included in this unit are small areas of Caliza very gravelly sandy loam in areas adjacent to arroyos and drainageways, Turney Variant gravelly loam, and Adelino Variant gravelly loamy sand. Included areas make up about 25 percent of the total acreage.

Permeability of this Turney soil is moderate. Available water capacity moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

This unit is used as homesites and for urban development.

This unit is well suited to urban development. It has few limitations. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Because of the high content of calcium carbonate, iron deficiencies are evident in ornamentals. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

132—Gila fine sandy loam, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 90 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is light brown fine sandy loam about 9 inches thick. The upper 42 inches of the underlying material is brown silt loam, and the lower part to a depth of 60 inches or more is dark brown silty clay loam.

Included in this unit are small areas of Anthony Variant soils and other Gila soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Gila soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is well suited to use as irrigated cropland. The main limitations are the hazard of soil blowing, slight salinity, and poor tilth. Growing cover crops, stripcropping, and growing grasses and legumes in the cropping system provide protection from soil blowing. Stubble and other crop residue should be managed to provide protection from soil blowing. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pastureland and hayland. Cool season and warm season grasses are productive when fertilized and otherwise properly managed. Alfalfa does well when harvested at the proper stage of growth and if managed to encourage a healthy root system.

This unit is well suited to urban development. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens.

If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

211—Armijo clay, occasionally flooded, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 125 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown clay about 10 inches thick. The upper 34 inches of the underlying material is pinkish gray clay, and the lower part to a depth of 60 inches or more is light brown sandy clay loam.

Included in this unit are small areas of Armijo soils that are not subject to flooding, Saneli soils, and Glendale soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Armijo soil is very slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is subject to occasional periods of flooding during high-intensity thunderstorms in summer. This soil is moderately saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is poorly suited to use as irrigated cropland. The main limitations are the hazard of flooding, very slow permeability, very slow water intake rate, moderate salinity, and poor tilth. The hazard of flooding limits crop selection. Tillage operations should not include those that turn the soil over and bring leached salts to the surface. Chiseling and disking are more effective alternatives. The cropping system should include high residue, salt tolerant crops such as small grain. Growing grasses and legumes, which have a well developed root system, improve the tilth of the soil and facilitate the leaching of soluble salts. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pasture. Improved grass species that are adapted to occasional periods of flooding and moderate salinity produce well when fertilized and otherwise properly managed.

This unit is poorly suited to use as hayland. Alfalfa hay is easily drowned if floodwater is not removed within 8 to 12 hours.

This unit is poorly suited to urban development. The main limitations are occasional periods of flooding and high shrink-swell potential. Buildings and roads should be designed to compensate for the effects of shrinking and swelling. Flooding can be controlled only by use of major flood control structures.

214—Saneli clay, occasionally flooded, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 10 to 100 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is light brown clay about 9 inches thick. The upper 20 inches of the underlying material is light brown clay, the next 4 inches is very pale brown loamy sand, and the lower part to a depth of 60 inches or more is very pale brown sand.

Included in this unit are small areas of Armijo and Popotosa soils and Saneli soils that are not subject to flooding. Included areas make up about 30 percent of the total acreage.

Permeability of this Saneli soil is very slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is subject to occasional periods of flooding during high intensity thunderstorms in summer. This soil is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is poorly suited to use as irrigated cropland. It is limited by the hazard of flooding, very slow permeability, very slow water intake rate, slight salinity, and poor tilth. The hazard of flooding limits crop selection. Tillage operations should not include those that turn the soil over and thus bring leached salts to the surface. Chiseling and disking are more effective alternatives. The cropping system should include high residue, salt tolerant crops such as small grain. Grasses and legumes, with their well developed root systems, improve the tilth of the soil and facilitate the leaching of soluble salts when used. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pasture. Improved grass species that are adapted to occasional periods of flooding and moderate salinity produce well when fertilized and otherwise properly managed.

This unit is poorly suited to use as hayland. Alfalfa hay is easily drowned if floodwater is not removed within 8 to 12 hours.

This unit is poorly suited to urban development. The main limitations are high shrink-swell potential and occasional periods of flooding. Buildings and roads should be designed to compensate for the effects of shrinking and swelling. Flooding can be controlled only by use of major flood control structures.

222—Glendale clay loam, occasionally flooded, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 10 to 100 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown clay loam about 19 inches thick. The underlying material is stratified, brown, light brown, and pink silt loam, clay loam, and loam that extend to a depth of 60 inches or more.

Included in this unit are small areas of Armijo and Anthony Variant soils and Glendale sandy loam. Included areas make up about 25 percent of the total acreage.

Permeability of this Glendale soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is subject to occasional periods of flooding during high intensity thunderstorms in summer. This soil is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is suited to use as irrigated cropland. The main limitations are the hazard of flooding, moderately slow permeability, moderately slow water intake rate, slight salinity, and poor tilth. The hazard of flooding limits crop selection. The cropping system should include high residue crops, green manure crops, grasses, and legumes. Grasses and legumes, with their well developed root systems, improve the tilth of the soil and facilitate the leaching of soluble salts. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pasture. The species selected should be those that are adapted to occasional periods of flooding and slight salinity. The soil is productive when fertilized and otherwise properly managed.

This unit is poorly suited to use as hayland. Alfalfa hay is easily drowned if floodwater is not removed within 8 to 12 hours.

This unit is poorly suited to urban development. The main limitations are occasional periods of flooding and shrink-swell potential. in summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and vegetable gardens. Flooding can be controlled only by use of major flood control structures.

226—Popotosa clay loam, occasionally flooded, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 10 to 65 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is light brown clay loam about 11 inches thick. The upper 18 inches of the underlying material is light brown loam and clay loam, and the lower part to a depth of 60 inches or more is pale brown sand.

Included in this unit are small areas of Glendale soils and other Popotosa soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Popotosa soil is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is subject to occasional periods of flooding during high intensity thunderstorms in summer. This unit is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is suited to use as irrigated cropland. The main limitations are hazard of flooding, moderately slow permeability, moderately slow water intake rate, slight salinity, and poor tilth. The hazard of flooding limits crop selection. The cropping system should include high residue crops, green manure crops, grasses, and legumes. Grasses and legumes, with their well developed root systems, improve the tilth of the soil and facilitate the leaching of soluble salts. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pasture. The species selected should be those that are adapted to occasional periods of flooding and slight salinity. This soil is productive when fertilized and otherwise properly managed.

This unit is poorly suited to use as hayland. Alfalfa hay is easily drowned if floodwater is not removed within 8 to 12 hours.

This unit is poorly suited to urban development. The main limitations are high shrink-swell potential and occasional periods of flooding. Buildings and roads should be designed to compensate for the effects of shrinking and swelling. Flooding can be controlled only by use of major flood control structures.

232—Gila clay loam, occasionally flooded, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 65 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is yellowish brown clay loam about 14 inches thick. The upper 10 inches of the underlying material is light yellowish brown silt loam, the next 5 inches is light yellowish brown sand, and the lower part to a depth of 60 inches or more is very pale brown silt loam and very fine sandy loam.

Included in this unit are small areas of Glendale and Gila soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Gila soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is subject to occasional periods of flooding during high intensity thunderstorms in summer. This soil is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is suited to use as irrigated cropland. The main limitations are the hazard of flooding, moderately slow water intake rate, slight salinity, and poor tilth. The hazard of flooding limits crop selection. The cropping system should include high residue crops, green manure crops, grasses, and legumes. Grasses and legumes, with their well developed root systems, improve the tilth of the soil and facilitate the leaching of soluble salts. Row crops should not be planted on ridges, because capillary action causes an accumulation of soluble salts at the surface in these areas.

This unit is well suited to use as irrigated pasture. The species selected should be those that are adapted to occasional periods of flooding and slight salinity. The soil is productive when fertilized and otherwise properly managed.

This unit is poorly suited to use as hayland. Alfalfa hay is easily drowned if floodwater is not removed within 8 to 12 hours.

This unit is poorly suited to urban development. The main limitation is occasional periods of flooding. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens. Flooding can be controlled only by use of major flood control structures.

244—Anthony sandy loam, occasionally flooded, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 125 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is light brown sandy loam about 12 inches thick. The upper 26 inches of the underlying material is light yellowish brown loamy very fine sand, and the lower part to a depth of 60 inches or more is light yellowish brown, very pale brown, and pale brown silt loam and fine sand.

Included in this unit are small areas of Gila, Anthony Variant, and other Anthony soils. Included areas make up about 42 percent of the total acreage.

Permeability of this Anthony soil is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This unit is subject to occasional periods of flooding during high intensity thunderstorms in summer. This unit is moderately saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is suited to use as irrigated cropland. The main limitations are the hazard of flooding, hazard of soil blowing, very low available water capacity, moderate salinity, and poor tilth. The hazard of flooding limits crop selection. Tillage operations should not include those that turn over the soil and thus bring leached soluble salts to the surface. Chiseling and disking are more effective alternatives. Growing cover crops, stripcropping, and growing grasses and legumes in the cropping system provide protection from soil blowing. Stubble and other crop residue should be managed to provide protection from soil blowing in spring. Irrigation water should be applied in light and frequent applications to compensate for the very low available water capacity. Mulching with manure is an effective method of improving available water capacity and tilth and increasing fertility. In order to avoid loss of water by deep percolation, irrigation water should be applied at high rates using short runs. Water soluble fertilizer should be applied in several light applications to maintain a high fertility level.

This unit is well suited to use as irrigated pastureland and hayland. Cool season and warm season grasses are productive when fertilized and otherwise properly managed. Alfalfa does well when harvested at the proper stage of growth and if managed to encourage a healthy root system. Ponding of water from flooding generally is of short duration on this soil.

This unit is poorly suited to urban development. The main limitations are occasional periods of flooding and moderate salinity. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens. Flooding can be controlled only by use of major flood control structures.

250—Brazito fine sandy loam, occasionally flooded, 0 to 1 percent slopes. This deep, well drained soil is on the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 5 to 60 acres in size. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown fine sandy loam about 10 inches thick. The upper 4 inches of the underlying material is light yellowish brown loamy fine sand, and the lower part to a depth of 60 inches or more is very pale brown coarse sand.

Included in this unit are small areas of Saneli and Agua soils. Included areas make up about 25 percent of the total acreage.

Permeability of this Brazito soil is rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This unit is subject to occasional periods of flooding during high intensity thunderstorms in summer. This soil is slightly saline. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for irrigated crops and urban development.

This unit is poorly suited to use as irrigated cropland. The main limitations are low available water capacity, moderately rapid water intake rate, a hazard of soil blowing, slight salinity, and poor tilth. Growing cover crops, stripcropping, and growing grasses and legumes in the cropping system provide protection from soil blowing. Stubble and other crop residue should be managed to provide protection from soil blowing in spring. Irrigation water should be applied in light and frequent applications to compensate for the limitation of low available water capacity. Mulching with manure is an effective method of improving available water capacity and tilth and increasing fertility. In order to avoid loss of water by deep percolation, irrigation water should be applied at high rates using short runs. Water soluble fertilizer should be applied in several light applications to maintain a high fertility level.

This unit is well suited to use as irrigated pastureland and hayland. Cool season and warm season grasses are productive when fertilized and otherwise properly managed. Alfalfa does well when harvested at the proper stage of growth and if managed to encourage a healthy root system.

This unit is poorly suited to urban development. The main limitation is occasional periods of flooding. In summer, irrigation is needed for lawn grasses, shrubs, vines, shade trees, and ornamental trees. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens. Flooding can be controlled only by use of major flood control structures.

401—Motoqua-Rock outcrop complex, 10 to 45 percent slopes. This map unit is on mountains, hills, and ridges. Areas are irregular in shape and are 100 to 4,550 acres in size. The present vegetation is trees, grass, and shrubs. Elevation is 6,300 to 8,500 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

This unit is 50 percent Motoqua very stony loam, 10 to 45 percent slopes, and 30 percent Rock outcrop. The Motoqua soil is on sides of hills, ridges, and mountains, and Rock outcrop occurs throughout the unit as ledges and escarpments.

Included in this unit are small areas of a soil that is similar to the Motoqua soil but is moderately deep and is throughout the unit and Motoqua soils that have slopes of more than 45 percent. Included areas make up about 20 percent of the total acreage.

The Motoqua soil is shallow and well drained. It formed in alluvium derived dominantly from tuff. Typically, the surface layer is brown very stony loam about 3 inches thick. The upper 4 inches of the subsoil is brown very cobbly clay loam, and the lower 9 inches is reddish brown very cobbly clay loam. Tuff is at a depth of 16 inches.

Permeability of the Motoqua soil is moderately slow. Available water capacity is very low. Effective rooting depth is 12 to 20 inches. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is moderate.

Rock outcrop consists of exposed areas of tuff. There is little if any vegetation in these areas. Surface runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, sideoats grama, blue grama, and little bluestem. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are New Mexico feathergrass and wolftail. The average annual production of air-dry vegetation ranges from 1,300 pounds per acre in favorable years to 575 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as blue grama, wolftail, and broom snakeweed.

This unit is suited to management practices such as proper grazing use. planned grazing systems, fencing, and livestock water developments.

Fences and livestock water pipelines are difficult to install because of the shallow depth to bedrock. Grazing management should be designed to increase the productivity and reproduction of sideoats grama and black grama.

403—Puertecito-Rock outcrop complex, 5 to 55 percent slopes. This map unit is on mountains and hills. Areas are irregular in shape and are 125 to 6,500 acres in size. The present vegetation is grass and scattered trees. Elevation is 5,200 to 7,300 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 47 to 57 degrees F, and the average frost-free period is 145 to 180 days.

This unit is 55 percent Puertecito very gravelly loam, 5 to 55 percent slopes, and 25 percent Rock outcrop. The Puertecito soil is on sides of hills and mountains, and Rock outcrop occurs as ledges and outcrops throughout mapped areas.

Included in this unit are small areas of Motoqua soils on north-facing slopes, Winona soils adjacent to the boundary of the Cibola National Forest in the southern part of the survey area, a soil that is similar to the Puertecito soil but is moderately deep and is on fans and in pockets between Rock outcrop, areas that have slopes of as much as 65 percent, Magdalena soils in the southern part of the survey area, and Glenberg soils in drainageways. Included areas make up about 20 percent of the total acreage.

The Puertecito soil is very shallow and shallow and is well drained. It formed in alluvium and colluvium derived dominantly from tuff. Typically, the surface layer is dark brown very gravelly loam about 2 inches thick. The upper 7 inches of the subsoil is dark brown very gravelly loam, and the lower 5 inches is reddish brown very gravelly clay loam. Hard, consolidated tuff is at a depth of 14 inches.

Permeability of the Puertecito soil is moderately slow. Available water capacity is very low. Effective rooting depth is 8 to 20 inches. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is moderate.

Rock outcrop consists of exposed areas of tuff. It supports little if any vegetation, and surface runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by sideoats grama, blue grama, black grama, little bluestem, and oneseed juniper. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are New Mexico feathergrass, cane bluestem, and hairy mountainmahogany. The average annual production of air-dry vegetation ranges from 1,300 pounds per acre in favorable years to 575 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, little bluestem, and black grama decrease and there is an increase in plants such as blue grama, broom snakeweed, and oneseed juniper.

This unit is suited to management practices such as proper grazing use, planned grazing systems, fencing, and livestock water developmants.

Fencing and installing pipelines for providing water for livestock are difficult because of the very shallow and shallow depth to bedrock and slope. Grazing management should be designed to increase the productivity and reproduction of sideoats grama, black grama, and little bluestem.

404—Motoqua, cool-Rock outcrop complex, 15 to 50 percent slopes. This map unit is on hills and mountains. Areas are irregular in shape and are 75 to 7,000 acres in size. The present vegetation is grass and trees. Elevation is 6,100 to 7,800 feet. The average annual precipitation is about 12 to 14 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 145 to 170 days.

This unit is 50 percent Motoqua gravelly loam, cool, 15 to 50 percent slope, and 25 percent Rock outcrop. The Motoqua soil is on sides of hills and mountains, and Rock outcrop occurs throughout the unit as ridges, cliffs, and escarpments.

Included in this unit are small areas of a soil that is similar to the Motoqua soil but is moderately deep and is on benches between areas of Rock outcrop; Puertecito soils on south-facing slopes; and Motoqua, cool, soils that have slopes of less than 15 percent. Included areas make up about 25 percent of the total acreage.

The Motoqua soil is shallow and well drained. It formed in alluvium derived dominantly from tuff. Typically, the surface layer is brown gravelly loam about 2 inches thick. The upper 7 inches of the subsoil is dark brown very gravelly loam, and the lower part to a depth of 16 inches is brown very gravelly clay loam. Tuff is at a depth of 16 inches.

Permeability of the Motoqua soil is moderately slow. Available water capacity is very low. Effective rooting depth is 12 to 20 inches. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is moderate.

Rock outcrop consists of exposed areas of tuff. It supports little if any vegetation. Surface runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by blue grama, sideoats grama, muttongrass, and pinyon. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are prairie junegrass, little bluestem, skunkbush sumac, and oneseed juniper. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 375 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, muttongrass, and little bluestem decrease and there is an increase in plants such as blue grama, broom snakeweed, pinyon, and oneseed juniper.

This unit is suited to management practices such as proper grazing use, planned grazing systems, fencing, and livestock water developments.

Fencing and installing pipelines for providing water for livestock are difficult because of the shallow depth to bedrock and slope. Grazing management should be designed to increase the productivity and reproduction of sideoats grama and muttongrass.

This unit has limited suitability for the production of wood products such as fenceposts and firewood.

405—Thunderbird gravelly loam, 1 to 10 percent slopes. This moderately deep, well drained soil is on plains of basalt capped mesas. It formed in alluvium derived dominantly from basalt and loess. Slope is 1 to 10 percent. Areas are irregular in shape and are 50 to 1,500 acres in size. The present vegetation is grass with scattered trees. Elevation is 8,000 to 8,200 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 51 degrees F, and the average frost-free period is 115 to 130 days.

Typically, the surface layer is brown gravelly loam about 6 inches thick. The upper part of the subsoil is brown gravelly clay loam about 4 inches thick, and the lower part is brown clay and gravelly clay about 19 inches thick. Basalt is at a depth of 29 inches.

Included in this unit are small areas of a soil.that is similar to this Thunderbird soil but is shallow and is near areas of Rock outcrop. Also included are small areas of Rock outcrop. Included areas make up about 20 percent of the total acreage.

Permeability of this Thunderbird soil is slow. Available water capacity is low. Effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by blue grama, western wheatgrass, sideoats grama, and bottlebrush squirreltail. The average annual production of air-dry vegetation ranges from 1,100 pounds per acre in favorable years to 425 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass and sideoats grama decrease and there is an increase in plants such as blue grama, ring muhly, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass and sideoats grama.

410—Clovis-Penistaja association, 1 to 10 percent slopes. This map unit is on fan terraces and bajadas. Areas are irregular in shape and are 100 to 3,500 acres in size. The present vegetation is grass. Elevation is 5,500 to 7,000 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 145 to 165 days.

This unit is 55 percent Clovis fine sandy loam, 1 to 10 percent slopes, and 25 percent Penistaja fine sandy loam, 1 to 6 percent slopes. The Clovis soil is on fan terraces and bajadas, and the Penistaja soil is on fan terraces.

Included in this unit are small areas of La Fonda and Millett soils throughout the unit, Cascajo soils on ridges, and Glenberg soils in swales. Included areas make up about 20 percent of the total acreage.

The Clovis soil is deep and well drained. It formed in alluvium. Typically, the surface layer is brown fine sandy loam about 6 inches thick. The upper 12 inches of the subsoil is reddish brown clay loam, and the lower 4 inches is reddish brown sandy clay loam. The substratum to a depth of 60 inches or more is pink loam.

Permeability of the Clovis soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Penistaja soil is deep and well drained. It formed in mixed alluvium and eolian deposits. Typically, the surface layer is brown fine sandy loam about 4 inches thick. The subsoil is reddish brown sandy clay loam about 32 inches thick. The substratum to a depth of 60 inches or more is pink loam.

Permeability of the Penistaja soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is very high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by blue grama, sideoats grama, black grama, galleta, and bottlebrush squirreltail. The average annual production of air-dry vegetation ranges from 1,000 pounds per acre in favorable years to 525 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, black grama, and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, ring muhly, threeawn, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of sideoats grama and black grama.

418—Rizozo-Alicia-Rock outcrop association, 1 to 30 percent slopes. This map unit is on small cuestas and adjacent fan terraces and in swales. Areas are irregular in shape and are 100 to 2,000 acres in size. The present vegetation is grasses, shrubs, and oneseed juniper. Elevation is 5,800 to 6,300 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 145 to 165 days.

This unit is 40 percent Rizozo channery loam, 2 to 15 percent slopes; 25 percent Alicia very fine sandy loam, 1 to 5 percent slopes; and 15 percent Rock outcrop. The Rizozo soil is on dip slopes of cuestas; the Alicia soil is on fan terraces and in swales between cuestas; and Rock outcrop is on scarp faces of cuestas.

Included in this unit are small areas of a soil that is similar to the Alicia soil but has bedrock at a depth of 40 to 60 inches, Clovis and Harvey soils on fan terraces and in swales, soils that are similar to the Rizozo soil but have more than 35 percent coarse fragments and are on cuesta dip slopes, and soils that are similar to the Rizozo and Alicia soils but are moderately deep over sandstone or claystone and are throughout the unit. Included areas make up about 20 percent of the total acreage.

The Rizozo soil is very shallow and shallow and well drained. It formed in alluvium derived dominantly from siltstone and sandstone. Typically, the surface layer is reddish brown channery loam about 4 inches thick. The underlying material is light reddish brown channery silt loam about 8 inches thick. Siltstone is at a depth of 12 inches.

Permeability of the Rizozo soil is moderate. Available water capacity is very low. Effective rooting depth is 4 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

The Alicia soil is deep and well drained. It formed in alluvium derived dominantly from siltstone and sandstone. Typically, the surface layer is reddish brown very fine sandy loam about 5 inches thick. The upper 10 inches of the subsoil is reddish brown loam, and the lower 36 inches is reddish brown silt loam. The substratum to a depth of 60 inches or more is red silty clay loam.

Permeability of the Alicia soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high. The hazard of flooding is rare in summer.

Rock outcrop consists of exposed areas of sandstone or siltstone. There is little if any vegetation in these areas. Surface runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Rizozo soil is characterized mainly by black grama, sideoats grama, blue grama, and New Mexico feathergrass. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are little bluestem and oneseed juniper. The average annual production of air-dry vegetation ranges from 750 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, black grama, New Mexico feathergrass, and little bluestem decrease and there is an increase in plants such as blue grama, galleta, threeawn, and oneseed juniper.

The potential natural plant community on the Alicia soil is characterized mainly by blue grama, black grama, sideoats grama, and bottlebrush squirreltail. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are alkali sacaton and galleta. The average annual production of air-dry vegetation ranges from 1,100 pounds per acre in favorable years to 525 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, ring muhly, sand dropseed, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Installation of pipelines for supplying water to livestock on the Rizozo soil is difficult because of the very shallow and shallow depth to sandstone and the rough terrain. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and cool season grasses such as bottlebrush squirreltail.

419—Navajo-Alicia association, 0 to 4 percent slopes. This map unit is on alluvial fans, fan terraces, and in swales. Areas are irregular in shape and are 150 to 6,800 acres in size. The present vegetation is grasses and shrubs. Elevation is 5,400 to 6,800 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 145 to 165 days.

This unit is 45 percent Navajo silt loam, 0 to 2 percent slopes, and 35 percent Alicia loam, 1 to 4 percent slopes. The Navajo soil is in swales and on toes of alluvial fans, and the Alicia soil is on fan terraces.

Included in this unit are small areas of soils that are similar to the Navajo and Alicia soils but are moderately deep over sandstone; Gullied Land and Rock outcrop; Sparank, San Mateo, and La Fonda soils; and a soil that is similar to these Navajo and Alicia soils but has bedrock at a depth of 40 to 60 inches. Included areas are throughout the unit. Included areas make up about 20 percent of the total acreage.

The Navajo soil is deep and well drained. It formed in alluvium derived dominantly from red shale and claystone. Typically, the surface layer is reddish brown silt loam about 3 inches thick. The upper 13 inches of the underlying material is reddish brown silty clay loam, and the lower part to a depth of 60 inches or more is reddish brown silty clay.

Permeability of the Navajo soil is very slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. The Navajo soil is moderately saline and alkali. The Navajo soil is subject to frequent periods of flooding during thunderstorms in summer.

The Alicia soil is deep and well drained. It formed in alluvium derived dominantly from sandstone and siltstone. Typically, the surface layer is light reddish brown loam about 3 inches thick. The upper 14 inches of the subsoil is reddish brown silty clay loam, and the lower 19 inches is reddish brown clay loam. The substratum to a depth of 60 inches or more is light reddish brown silty clay loam.

Permeability of the Alicia soil is moderately slow. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high. The Alicia soil is subject to rare periods of flooding during thunderstorms in summer.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Navajo soil is characterized mainly by alkali sacaton, western wheatgrass, galleta, and vine-mesquite. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are blue grama and bottlebrush squirreltail. The average annual production of air-dry vegetation ranges from 1,750 pounds per acre in favorable years to 600 pounds in unfavorable years. If the plant community deteriorates, alkali sacaton, western wheatgrass, vine-mesquite, and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, galleta, burrograss, and mat muhly. Deterioration of the vegetation on this soil often results in the formation of gullies that drain the site and reduce production of vegetation.

The potential natural plant community on the Alicia soil is characterized mainly by blue grama, black grama, sideoats grama, and bottlebrush squirreltail. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are alkali sacaton and galleta. The average annual production of air-dry vegetation ranges from

1,100 pounds per acre in favorable years to 525 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, ring muhly, sand dropseed, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grade stabilization structures are feasible on the Navajo soil. If the plant cover is disturbed, treatment is needed to control gullying, steambank cutting, and sheet erosion. Grazing management should be designed to increase the productivity and reproductioin of black grama and sideoats grama on the Alicia soil and western wheatgrass and alkali sacaton on the Navajo soil.

421—Glenberg-Riverwash association, 0 to 5 percent slopes. This map unit is on flood plains of arroyos (fig.1). Areas are long and narrow and are 100 to 3,000 acres in size. The present vegetation is grasses and shrubs. Elevation is 5,000 to 7,000 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 57 degrees F, and the average frost-free period is 145 to 165 days.

This unit is 45 percent Glenberg sandy loam, 0 to 5 percent slopes, and 30 percent Riverwash. The Glenberg soil is on flood plains, and Riverwash is in stream channels.

Included in this unit are small areas of San Mateo soils, soils that are similar to the Glenberg and San Mateo soils but are very gravelly or very cobbly throughout the profile, and Manzano soils. The included soils are throughout the unit. Included areas make up about 25 percent of the total acreage.

The Glenberg soil is deep and well drained. It formed in recent alluvium. Typically, the surface layer is pale brown sandy loam about 8 inches thick. The upper 19 inches of the underlying material is pale brown, light brownish gray gravelly loamy sand and gravelly sandy

Figure 1.—Typical area of Glenberg Riverwash association, 0 to 5 percent slopes.

loam, the next 25 inches is brown and pale brown fine sandy loam and loam, and the lower part to a depth of 60 inches or more is brown sandy loam.

Permeability of the Glenberg soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. The Glenberg soil is subject to occasional flooding in summer.

Riverwash is loose sand, pebbles, cobbles, and stones in channels and on bars. It is devoid of vegetation and is subject to frequent periods of flooding by runoff during thunderstorms in summer.

This unit is used for livestock grazing and wildlife habitat.

This unit is unstable because of its position along arroyos. The potential natural plant community is variable but consists mainly of alkali sacaton, vine-mesquite, cane bluestem, sand dropseed, Apacheplume, and baccharis.

Management of this unit is variable.

424—Manzano silt loam, 1 to 3 percent slopes. This deep, well drained soil is in swales and drainageways. It formed in recent alluvium. Areas are irregular to long and narrow in shape and are 100 to 1,000 acres in size. The present vegetation is grass. Elevation is 6,000 to 7,400 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is brown silt loam about 8 inches thick. The subsoil is dark brown clay loam and silty clay loam about 30 inches thick. The upper 12 inches of the substratum is brown loam, and the lower part to a depth of 60 inches or more is brown clay loam.

Included in this unit are small areas of Augustine and Datil soils throughout the unit and soils that are similar to this Manzano soil but are coarser in texture and are throughout the unit. Included areas make up about 20 percent of the total acreage.

Permeability of this Manzano soil is moderately slow. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is subject to rare periods of flooding during prolonged high-intensity thunderstorms in summer. A seasonal high water table fluctuates between depths of 42 and 72 inches in June through September.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by western wheatgrass, spike muhly, blue grama, bottlebrush squirreltail, and fourwing saltbush. The average annual production of air-dry vegetation ranges from 1,350 pounds per acre in favorable years to 600 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass and spike muhly decrease and there is an increase in plants such as blue grama, mat muhly, ring muhly, and broom snakeweed. Sixweeks grama invades the Manzano soil if the perennial vegetation is removed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. If the plant cover is disturbed, treatment is needed to control gullying, streambank cutting, and sheet erosion. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass and spike muhly.

425—Sparank silty clay loam, 0 to 2 percent slopes. This deep, well drained soil is on alluvial fans and in swales. It formed in alluvium derived dominantly from shale. Areas are elongated and are 100 to 2,000 acres in size. The present vegetation is grass and shrubs. Elevation is 6,000 to 6,700 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 53 to 56 degrees F, and the average frost-free period is 150 to 160 days.

Typically, the surface layer is light brownish gray silty clay loam about 2 inches thick. The upper 26 inches of the underlying material is light brownish gray silty clay loam, the next 5 inches is light brownish gray clay loam, and the lower part to a depth of 60 inches or more is light brownish gray silty clay.

Included in this unit are small areas of gullied land next to large arroyos, Rock outcrop on eroded knolls, soils that are similar to the Sparank soil but are higher in silt content, soils that are similar to the Sparank soil but have bedrock at a depth of 40 to 60 inches, and areas of Sparank soils that have slopes of as much as 4 percent. Included areas are throughout the unit. Included areas make up about 20 percent of the total acreage.

Permeability of the Sparank soil is very slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. Depressional areas of this soil are subject to rare periods of flooding and ponding from summer thunderstorms.

This unit is used for livestock grazing and wildlife habitat.

The potential native plant community on this unit consists of alkali sacaton, western wheatgrass, vine-mesquite, and galleta. Giant sacaton is present at the lower elevations. The average annual production of air-dry vegetation ranges from 3,000 pounds per acre in favorable years to 1,200 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, alkali sacaton, and vine-mesquite decrease and there is an increase in plants such as mat muhly, burrograss, galleta, and broom snakeweed. Deterioration of the vegetation on the Sparank soil often results in the formation of gullies that drain the site and reduce production of vegetation.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. If the plant cover is disturbed, treatment is needed to control gullying, streambank cutting, and sheet erosion. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass, alkali sacaton, and vine-mesquite.

This unit is suited to such management practices as proper grazing use, planned grazing systems, optimal placement of salt for livestock, and livestock watering facilities.

431—Harvey-Winona association, 2 to 10 percent slopes. This map unit is on cuestas and in swales between the cuestas. Areas are irregular in shape and are 250 to 3,000 acres in size. The present vegetation is grass with a few scattered junipers. Elevation is 5,900 to 6,500 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 145 to 160 days.

This unit is 50 percent Harvey fine sandy loam, 2 to 10 percent slopes, and 20 percent Winona very channery fine sandy loam, 2 to 10 percent slopes. The Harvey soil is in swales, and the Winona soil is on cuesta dip slopes.

Included in this unit are small areas of Deama soils on dip slopes on north aspects, a moderately deep soil on scarp faces of cuestas, La Fonda soils in swales, Rock outcrop on the crest of cuestas, a deep silty soil on scarp faces of cuestas, Pinon soils on dip slopes, and a Harvey soil that is gravelly throughout and is in swales. Included areas make up about 30 percent of the total acreage.

The Harvey soil is deep and well drained. It formed in alluvium. Typically, the surface layer is brown fine sandy loam about 2 inches thick. The subsoil is brown loam about 8 inches thick. The upper 42 inches of the substratum is light brown clay loam and loam, and the lower part to a depth of 60 inches or more is light brown fine sandy loam.

Permeability of the Harvey soil is moderate. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is moderate, and the hazard of water erosion is slight. The hazard of soil blowing is high.

The Winona soil is very shallow and shallow and is well drained. It formed in alluvium derived dominantly from limestone. Typically, the surface layer is dark brown very channery fine sandy loam about 2 inches thick. The underlying material is brown very gravelly loam about 8 inches thick. Limestone is at a depth of 10 inches.

Permeability of the Winona soil is moderate. Available water capacity is very low. Effective rooting depth is 7 to 20 inches. Runoff is moderate, and the hazard of water erosion is slight. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Harvey soil is characterized mainly by blue grama, black grama, galleta, bottlebrush squirreltail, and sideoats grama. The average annual production of air-dry vegetation ranges from 1,000 pounds per acre in favorable years to 425 pounds in unfavorable years. If the plant community deteriorates, black grama, bottlebrush squirreltail, and sideoats grama decrease and there is an increase in plants such as blue grama, galleta, ring muhly, and broom snakeweed.

The potential natural plant community on the Winona soil is characterized mainly by black grama, sideoats grama, New Mexico feathergrass, blue grama, and winterfat. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 475 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as sand dropseed, threeawn, and hairy grama.

This unit is suited to such management practices as proper grazing use, planned grazing systems, developing livestock watering facilities, and fencing. Installing pipelines for providing water for livestock and fencing are difficult because of the very shallow and shallow depth to bedrock in the Winona soil. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and New Mexico feathergrass.

432—Harvey-Winona-Tanbark association, 1 to 45 percent slopes. This map unit is on cuestas and in swales. Areas are irregular in shape and are 100 to 3,000 acres in size. The present vegetation is grass with scattered trees. Elevation is 5,700 to 6,600 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 145 to 170 days.

This unit is 40 percent Harvey fine sandy loam, 1 to 7 percent slopes, 20 percent Winona very flaggy loam, 5 to 25 percent slopes, and 15 percent Tanbark sandy loam, 15 to 45 percent slopes. The Harvey soil is in swales and drainageways between cuestas, the Winona soil is on dip slopes of cuestas, and the Tanbark soil is on scarp faces of cuestas.

Included in this unit are small areas of Clovis, La Fonda, and Calabasas soils in swales and drainageways between cuestas, Puice soils on dip slopes of cuestas, Rayohill and Netoma soils on the lower parts of cuesta scarp faces, and limestone Rock outcrop throughout the unit. Included areas make up about 25 percent of the total acreage.

The Harvey soil is deep and well drained. It formed in alluvium. Typically, the surface layer is brown fine sandy loam about 2 inches thick. The subsoil is light brown clay loam about 3 inches thick. The upper 13 inches of the substratum is pink clay loam, and the lower part to a depth of 60 inches or more is pink loam, clay loam, or sandy clay loam.

Permeability of the Harvey soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is moderate, and the hazard of water erosion is medium. The hazard of soil blowing is high.

The Winona soil is very shallow and shallow and is well drained. It formed in alluvium derived dominantly from limestone. Typically, the surface layer is brown very flaggy loam about 2 inches thick. The upper 6 inches of the underlying material is brown very cobbly loam, and the lower part to a depth of 17 inches is light brown very gravelly loam. Limestone is at a depth of 17 inches.

Permeability of the Winona soil is moderate. Available water capacity is very low. Effective rooting depth is 7 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

The Tanbark soil is very shallow and shallow and is well drained. It formed in alluvium derived dominantly from gypsum. Typically, the surface layer is pale brown sandy loam about 1 inch thick. The upper 5 inches of the underlying material is white silt loam, and the lower 4 inches is white loam. Gypsum bedrock is at a depth of 10 inches.

Permeability of the Tanbark soil is moderate. Available water capacity is very low. Effective rooting depth is 4 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Harvey soil is characterized mainly by blue grama, black grama, galleta, bottlebrush squirreltail, and winterfat. The average annual production of air-dry vegetation ranges from 1,000 pounds per acre in favorable years to 425 pounds in unfavorable years. If the plant community deteriorates, black grama, bottlebrush squirreltail, and winterfat decrease and there is an increase in plants such as blue grama, galleta, ring muhly, and broom snakeweed.

The potential natural plant community on the Winona soil is characterized mainly by New Mexico feathergrass, black grama, sideoats grama, bottlebrush squirreltail, and winterfat. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are blue grama and sand dropseed. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 475 pounds in unfavorable years. If the plant community deteriorates, New Mexico feathergrass, black grama, sideoats grama, and winterfat decrease and there is an increase in plants such as sand dropseed, threeawn, hairy grama, banana yucca, and broom snakeweed.

The potential natural plant community on the Tanbark soil is characterized mainly by black grama, gyp dropseed, galleta, Bigelow sagebrush, and coldenia. The average annual production of air-dry vegetation ranges from 400 pounds per acre in favorable years to 150 pounds in unfavorable years. If the plant community deteriorates, black grama and galleta decrease and there is an increase in plants such as gyp dropseed, Bigelow sagebrush, and coldenia.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Installing pipelines for providing water for livestock and fencing on the Winona and Tanbark soils are difficult because of the very shallow and shallow depth to bedrock. Grazing management should be designed to increase the productivity and reproduction of New Mexico feathergrass, black grama, and sideoats grama.

434—Rizozo-Rock outcrop complex, 1 to 30 percent slopes. This map unit is on hills and cuestas. Areas are irregular in shape and are 100 to 3,000 acres in size. The present vegetation is grass, shrubs, and oneseed juniper. Elevation is 5,500 to 7,000 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 145 to 165 days.

This unit is 50 percent Rizozo gravelly sandy loam, 1 to 15 percent slopes, and 30 percent Rock outcrop. The Rizozo soil is on dip slopes of cuestas and tops of hills, and Rock outcrop is on scarp faces and dip slopes of cuestas and sides of hills.

Included in this unit are small areas of soils that are similar to the Rizozo soil but are very gravelly or very channery and are throughout the unit; soils that are similar to the Rizozo soil but are moderately deep and are throughout the unit; La Fonda and Navajo soils in swales; and areas in which 1 to 5 inches of soil material overlays rock and supports in some areas supports vegetation. Included areas make up about 20 percent of the total acreage.

The Rizozo soil is very shallow and shallow and well drained. It formed in alluvium and eolian material derived dominantly from sandstone and shale. Typically, the surface layer is reddish brown gravelly sandy loam about 2 inches thick. The underlying material to a depth of 10 inches is reddish brown gravelly sandy loam and gravelly loam. Hard sandstone is at a depth of 10 inches.

Permeability of the Rizozo soil is moderate. Available water capacity is very low. Effective rooting depth is 5 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

Rock outcrop is mainly sandstone. It occurs as exposed bedding planes on cuestas and dip slopes and as small cliffs on cuesta scarp faces and hills. In some areas, Rock outcrop is shale and igneous intrusions of basaltic andesite present as dikes and sills.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by sideoats grama, blue grama, New Mexico feathergrass, little bluestem, and scattered oneseed juniper. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are wolftail, black grama, and hairy mountainmahogany. The average annual production of air-dry vegetation ranges from 700 pounds per acre in favorable years to 275 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, little bluestem, New Mexico feathergrass, black grama, and hairy mountainmahogany decrease and there is an increase in plants such as blue grama, wolftail, threeawn, pinyon, and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Installing pipelines for providing water for livestock and fencing are difficult because of the very shallow and shallow depth to sandstone. Grazing management should be designed to increase the productivity and reproduction of sideoats grama, New Mexico feathergrass, and little bluestem.

445—Millett-Sedillo complex, 1 to 15 percent slopes. This map unit is on bajadas. Areas are irregular in shape and are 250 to 5,000 acres in size. The present vegetation is grass. Elevation is 5,400 to 7,000 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 57 degrees F, and the average frost-free period is 145 to 180 days.

This unit is 50 percent Millett gravelly sandy loam, 1 to 15 percent slopes, and 30 percent Sedillo very gravelly fine sandy loam, 1 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Cascajo, Ladron, and Clovis soils. Included areas make up about 20 percent of the total acreage.

The Millett soil is deep and well drained. It formed in alluvium derived from rhyolitic tuff, lava, and granite. Typically, the surface layer is brown gravelly sandy loam about 3 inches thick. The upper 6 inches of the subsoil is brown gravelly loam, and the lower 9 inches is light brown gravelly sandy clay loam. The substratum to a depth of 60 inches or more is pink very gravelly sandy loam and very gravelly loam.

Permeability of the Millett soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is high.

The Sedillo soil is deep and well drained. It formed in alluvium derived from rhyolitic tuff, lava, and granite. Typically, the surface layer is brown very gravelly fine sandy loam about 3 inches thick. The upper 7 inches of the subsoil is reddish brown very gravelly clay loam, and the lower 9 inches is brown very gravelly sandy clay loam. The upper 17 inches of the substratum is pink very gravelly fine sandy loam, and the lower part to a depth of 60 inches or more is light brown very gravelly fine sandy loam.

Permeability of the Sedillo soil is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is for livestock grazing and wildlife habitat.

The potential natural plant community on the Millet soil is characterized mainly by blue grama, black grama, galleta, sideoats grama, and bottlebrush squirreltail. The average annual production of air-dry vegetation ranges from 1,000 pounds per acre in favorable years to 425 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, galleta, ring muhly, sand dropseed, and broom snakeweed.

The potential natural plant community on the Sedillo soil is characterized mainly by black grama, New Mexico feathergrass, sideoats grama, blue grama, and wolftail. The average annual production of air-dry vegetation ranges from 1,300 pounds per acre in favorable years to 550 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as blue grama, hairy grama, sand dropseed, threeawn, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and New Mexico feathergrass.

446—Harvey-Dean complex, 1 to 7 percent slopes. This map unit is on bajadas. Areas are irregular in shape and are 150 to 7,000 acres in size. The present vegetation is grass. Elevation is 5,400 to 6,400 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 57 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 50 percent Harvey fine sandy loam, 1 to 4 percent slopes, and 30 percent Dean gravelly fine sandy loam, 2 to 7 percent slopes. The Harvey soil is on the lower positions of bajadas, and the Dean soil is on the higher positions.

Included in this unit are small areas of La Fonda soils on lower the positions of bajadas, Calabasas soils in drainageways, Ladron soils on the higher positions of bajadas, and areas of soils adjacent to La Jencia Creek that have a mantle of sand. Included areas make up about 20 percent of the total acreage.

The Harvey soil is deep and well drained. It formed in alluvium derived dominantly from limestone. Typically, the surface layer is brown fine sandy loam about 2 inches thick. The subsoil is brown loam about 7 inches thick. The upper 19 inches of the substratum is light brown and pinkish white loam, and the lower part to a depth of 60 inches or more is pink and light brown loam.

Permeability of the Harvey soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Dean soil is deep and well drained. It formed in alluvium derived dominantly from limestone. Typically, the surface layer is light brown gravelly fine sandy loam about 2 inches thick. The subsoil is pink gravelly loam about 7 inches thick. The substratum to a depth of 60 inches or more is pink gravelly loam and gravelly clay loam.

Permeability of the Dean soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Harvey soil is characterized mainly by blue grama, black grama, galleta, bottlebrush squirreltail, and winterfat. The average annual production of air-dry vegetation ranges from 1,000 pounds per acre in favorable years to 425 pounds in unfavorable years. If the plant community deteriorates, black grama, bottlebrush squirreltail, and winterfat decrease and there is an increase in plants such as blue grama, galleta, ring muhly, burrograss, broom snakeweed, and walkingstick cholla.

The potential natural plant community on the Dean soil is characterized mainly by black grama, New Mexico feathergrass, sideoats grama, blue grama, and winterfat. The average annual production of air-dry vegetation ranges from 1,300 pounds per acre in favorable years to 550 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, and sideoats grama decrease and there is an increase in plants such as sand dropseed, burrograss, fluffgrass, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and New Mexico feathergrass.

449—Cascajo very gravelly sandy loam, 15 to 30 percent slopes. This deep, excessively drained soil is on hills and knolls. It formed in gravelly alluvium. Areas are irregular in shape and are 150 to 6,200 acres in size. The present vegetation is grass and shrubs. Elevation is 5,400 to 7,400 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 150 to 170 days.

Typically, the surface layer is brown very gravelly sandy loam about 2 inches thick. The subsoil is pale brown very gravelly sandy loam about 7 inches thick. The upper 8 inches of the substratum is very pale brown very gravelly sandy loam, and the lower part to a depth of 60 inches or more is light yellowish brown very gravelly loamy sand.

Included in this unit are small areas of Glenberg soils in drainageways, a soil that is similar to the Cascajo soil but has loamy layers in the substratum and is on the tops of hill and knolls, Datil soils on hilltops in the northwestern part of the survey area, Ladron soils in areas near Ladron Peak, a soil that is similar to this Cascajo soil but is finer textured in the lower part and is adjacent to the Sierra County line, and Cascajo soils that have slopes of 5 to 15 percent. Included areas make up about 30 percent of the total acreage.

Permeability of the Cascajo soil is rapid. Available water capacity is low. Effective rooting depth is 60 inches. Runoff is slow, and the hazard of water erosion is high. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community is characterized mainly by sideoats grama, blue grama, little bluestem, and black grama. Skunkbush sumac, oak, and oneseed juniper are present. The average annual production of air-dry vegetation ranges from 1,300 pounds per acre in favorable years to 550 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, New Mexico feathergrass, and little bluestem decrease and there is an increase in plants such as threeawn, fluffgrass, broom snakeweed, and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, optimal placement of salt for livestock, and livestock watering facilities. Fencing and installing pipelines for livestock water are difficult because of the roughness of the terrain. Grazing management should be designed to increase the productivity and reproduction of sideoats grama, black grama, and New Mexico feathergrass.

450—Royosa fine sand, 1 to 6 percent slopes. This deep, excessively drained soil is on stabilized sand dunes superimposed over alluvial fans. It formed in eolian deposits. Areas are irregular in shape and are 250 to 5,000 acres in size. The present vegetation is grass.

Elevation is 7,000 to 8,200 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is very pale brown fine sand about 4 inches thick. The underlying material to a depth of 60 inches or more is very pale brown fine sand.

Included in this unit are small areas of Telescope soils in stable areas and slick spots in depressional areas. Included areas make up about 15 percent of the total acreage.

Permeability of this Royosa soil is very rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is very high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by blue grama, Indian ricegrass, spike dropseed, and sand dropseed. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are bottlebrush squirreltail, sandhill muhly, and fourwing saltbush. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 275 pounds in unfavorable years. If the plant community deteriorates, Indian ricegrass and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, dropseed, sandhill muhly, threeawn, ring muhly, and sand sagebrush. Some low lying included areas within this unit are sodium affected and support a plant community consisting of alkali sacaton, western wheatgrass, and fourwing saltbush. Deterioration of the plant community on this unit commonly results in severe wind erosion and the formation of sand dunes.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of Indian ricegrass and bottlebrush squirreltail.

451—Magdalena gravelly loam, 3 to 12 percent slopes. This deep, well drained soil is on bajadas. It formed in gravelly alluvium derived from volcanic rock. Areas are irregular in shape and are 275 to 4,500 acres in size. The present vegetation is grass and trees. Elevation is 5,500 to 6,300 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 145 to 165 days.

Typically, the surface layer is yellowish red gravelly loam about 2 inches thick. The upper 12 inches of the subsoil is yellowish red and reddish brown very gravelly clay loam and very gravelly sandy clay, and the lower 22 inches is yellowish red, red, and dark red very gravelly clay. The substratum to a depth of 60 inches or more is yellowish red very gravelly clay.

Included in this unit are small areas of a soil that is similar to this Magdalena soil but does not have a layer of calcium carbonate accumulation where slopes are more than 15 percent and small areas of a soil that has an indurated calcium carbonate layer above a depth of 20 inches and is on toes of fans. Included areas make up about 25 percent of the total acreage.

Permeability of this Magdalena soil is very slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, sideoats grama, New Mexico feathergrass, and blue grama. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are sand dropseed and wolftail. The average annual production of air-dry vegetation ranges from 1,300 pounds per acre in favorable years to 575 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as blue grama, wolftail, threeawn, and broom snakeweed. Walkingstick cholla and oneseed juniper may invade this unit.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and NewMexico feathergrass.

452—Telescope-Royosa association, 1 to 3 percent slopes. This map unit is on the San Agustin plains. Areas are irregular in shape and are 2,500 to 10,000 acres in size. The present vegetation is grass. Elevation is 7,000 to 7,500 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

This unit is 60 percent Telescope loamy fine sand, 1 to 2 percent slopes, and 25 percent Royosa loamy fine sand, 1 to 3 percent slopes. The Telescope soil is in the more gently sloping areas, and the Royosa soil is on hummocks.

Included in this unit are small areas of Augustine, Datil, and Landavaso soils in the more gently sloping areas and saline-alkali spots in blowout areas. Included areas make up about 15 percent of the total acreage.

The Telescope soil is deep and well drained. It formed in alluvial and eolian material. Typically, the surface layer is brown loamy fine sand about 3 inches thick. The subsoil is brown fine sandy loam about 16 inches thick. The upper 26 inches of the substratum is pinkish gray fine sandy loam, and the lower part to a depth of 60 inches or more is pinkish gray loamy fine sand.

Permeability of the Telescope soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high.

The Royosa soil is deep and excessively drained. It formed in eolian deposits. Typically, the surface layer is brown loamy fine sand about 3 inches thick. The upper 17 inches of the underlying material is pale brown loamy sand, and the lower part to a depth of 60 inches or more is yellowish brown fine sand.

Permeability of the Royosa soil is very rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Telescope soil is characterized mainly by blue grama, western wheatgrass, sand dropseed, and Indian ricegrass. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are bottlebrush squirreltail and fourwing saltbush. The average annual production of air-dry vegetation ranges from 850 pounds per acre in favorable years to 325 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, Indian ricegrass, and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, sand dropseed, threeawn, and ring muhly.

The potential natural plant community on the Royosa soil is characterized mainly by blue grama, Indian ricegrass, spike dropseed, and sand dropseed. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are bottlebrush squirreltail, sandhill muhly, and fourwing saltbush. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 275 pounds in unfavorable years. If the plant community deteriorates, Indian ricegrass and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, dropseed, sandhill muhly, threeawn, ring muhly, and sand sagebrush.

Some low-lying included areas in this unit are sodium affected and support a plant community consisting of alkali sacaton, western wheatgrass, and fourwing saltbush. Deterioration of the plant community on this unit commonly results in severe wind erosion and the formation of sand dunes.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of Indian ricegrass, western wheatgrass, and bottlebrush squirreltail.

455—Datil sandy loam, 3 to 15 percent slopes. This deep, well drained soil is on fan terraces. It formed in alluvium derived from volcanic rock. Areas are irregular in shape and are 150 to 10,000 acres in size. The present vegetation is grass. Elevation is 6,400 to 7,600 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is brown sandy loam about 2 inches thick. The subsoil is dark brown and brown clay loam about 14 inches thick. The substratum to a depth of 60 inches or more is pinkish white and pink loam.

Included in this unit are small areas of Augustine and Landavaso soils in the more gently sloping areas; Dioxice, Guy, and Pena soils on ridges; and Datil soils that have slopes of more than 15 percent. Included areas make up about 20 percent of the total acreage.

Permeability of this soil is moderate. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by blue grama, western wheatgrass, spike muhly, bottlebrush squirreltail, and wolftail. The average annual production of air-dry vegetation ranges from 950 pounds per acre in favorable years to 375 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, spike muyly, and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, sand dropseed, threeawn, and ring muhly. In some areas of the unit pinyon has invaded.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watreing facilities. Brush management is an acceptable practice when accompanied by deferment from grazing. Grazing mamagement should be designed to increase the productivity of western wheatgrass, spike muhly, and bottlebrush squirreltail.

459—Pinon fine sandy loam, 1 to 12 percent slopes. This shallow, well drained soil is on mesas. It formed in alluvium derived dominantly from limestone and eolian material. Areas are irregular in shape and are 275 to 4,300 acres in size. The present vegetation is grass. Elevation is 5,700 to 6,600 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 145 to 165 days.

Typically, the surface layer is brown fine sandy loam about 2 inches thick. The underlying material is light brown and pink gravelly loam about 16 inches thick. Limestone is at a depth of 18 inches.

Included in this unit are small areas of Ladron soils on the lower positions and a soil that is similar to the Pinon soil but is moderately deep and is on mesas and in depressional areas. Included areas make up about 25 percent of the total acreage.

Permeability of this soil is moderately slow. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, sideoats grama, New Mexico feathergrass, blue grama, and winterfat. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 475 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, New Mexico feathergrass, and winterfat decrease and there is an increase in plants such as blue grama, threeawn, hairy grama, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Fencing and installing pipelines for providing water for livestock are difficult because of the shallow depth to indurated caliche. Grazing management should be designed to increase the productivity and reproduction of black grama, sidoats grama, and New Mexico feathergrass.

460—Lapdun-Datil association, 5 to 30 percent slopes. This map unit is on fan terraces and bajadas. Areas are irregular in shape and are 500 to 10,000 acres in size. The present vegetation is grass. Elevation is 6,500 to 7,600 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

This unit is 40 percent Lapdun gravelly loam, 5 to 30 percent slopes, and 40 percent Datil gravelly loam, 5 to 20 percent slopes. The Lapdun soil is on fan terraces and bajadas, and Datil soil is in the more gently sloping areas on fan terraces and bajadas.

Included in this unit are small areas of Pena and Dioxice soils, a soil that is similar to the Lapdun soil but is moderately deep and is on ridge crests and in the more strongly sloping areas, a soil that is similar to the Datil soil but has a high content of rock fragments, and a soil that is shallow to indurated caliche and is throughout the unit. Included areas make up about 20 percent of the total acreage.

The Lapdun soil is deep and well drained. It formed in alluvium derived from volcanic rock. Typically, the surface layer is brown gravelly loam about 9 inches thick. The upper 10 inches of the underlying material is very pale brown very gravelly clay loam, the next 16 inches is white extremely gravelly clay loam, and the lower part to a depth of 60 inches or more is pink very gravelly clay loam.

Permeability of the Lapdun soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Datil soil is deep and well drained. It formed in alluvium derived from volcanic rock. Typically, the surface layer is very dark grayish brown gravelly loam about 2 inches thick. The upper 11 inches of the subsoil is brown gravelly clay loam, and the lower 7 inches is brown gravelly sandy clay loam. The substratum to a depth of 60 inches or more is pink gravelly loam.

Permeability of the Datil soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Lapdun soil is characterized mainly by blue grama, New Mexico feathergrass, black grama, and winterfat. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are wolftail and sideoats grama. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 350 pounds in unfavorable years. If the plant community deteriorates, New Mexico feathergrass, sideoats grama, black grama, and winterfat decrease and there is an increase in plants such as blue grama, threeawn, sand dropseed, and broom snakeweed.

The potential natural plant community on the Datil soil is characterized mainly by blue grama, western wheatgrass, bottlebrush squirreltail, and spike muhly. The average annual production of air-dry vegetation ranges from 950 pounds per acre in favorable years to 375 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, bottlebrush squirreltail, and spike muhly decrease and there is an increase in plants such as blue grama, ring muhly, sand dropseed, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of New Mexico feathergrass, western wheatgrass, black grama, and sideoats grama.

472—Abrazo-Motoqua, cool-Rock outcrop complex, 10 to 50 percent slopes. This map unit is on hills and mountains. Areas are irregular in shape and are 350 to 18,500 acres in size. The present vegetation is trees and grass. Elevation is 6,500 to 8,600 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

This unit is 40 percent Abrazo gravelly sandy loam, 10 to 50 percent slopes, 25 percent Motoqua very gravelly loam, cool, 25 to 50 percent slopes, and 20 percent Rock outcrop. The Abrazo soil is on hills and mountains, and the Motoqua soil is on mountains adjacent to Rock outcrop. Rock outcrop is on ridgetops.

Included in this unit are small areas of a soil that is similar to the Motoqua soil but is less than 35 percent rock fragments and is in areas where slopes are less than 10 percent, a soil that is similar to the Abrazo soil but is coarser textured, and a soil that is similar to the Motoqua and Abrazo soils but is lighter in color and is along the Sierra County line. Included areas make up about 15 percent of the total acreage.

The Abrazo soil is moderately deep and well drained. It formed in alluvium and colluvium derived dominantly from tuff. Typically, the surface layer is dark brown gravelly sandy loam about 7 inches thick. The upper 13 inches of the subsoil is brown cobbly clay loam, and the lower 7 inches is strong brown very cobbly clay loam. Hard rhyolitic tuff is at a depth of 27 inches.

Permeability of the Abrazo soil is slow. Available water capacity is very low. Effective rooting depth is 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

The Motoqua soil is shallow and well drained. It formed in alluvium derived dominantly from tuff. Typically, the surface layer is brown very gravelly loam about 2 inches thick. The upper 4 inches of the subsoil is dark brown very cobbly loam, and the lower 6 inches is brown very cobbly clay loam. Hard tuff is at a depth of 12 inches.

Permeability of the Motoqua soil is moderately slow. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is moderate.

Rock outcrop consists of exposed areas of tuff. There is little if any vegetation in these areas. Surface runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by blue grama, muttongrass, prairie junegrass, bottlebrush squirreltail, and mountain muhly. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are oak, mountainmahogany, pinyon, and juniper. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 375 pounds in unfavorable years. If the plant community deteriorates, muttongrass, prairie junegrass, mountain muhly, bottlebrush squirreltail, and mountainmahogany decrease and there is an increase in plants such as blue grama, threeawn, ring muhly, pinyon, and juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, and fencing. Livestock watering facilities are difficult to install because of the rough terrain and the shallow depth of the Motoqua soil. The roughness of the terrain of this unit may lead to overuse of the more accessible areas. Grazing management should be designed to increase the productivity and reproduction of the cool season grasses such as bottlebrush squirreltail, mountain muhly, and mountainmahogany.

This unit has limited suitability for the production of wood products such as fenceposts and firewood.

478—Royosa-Loarc association, 1 to 5 percent slopes. This map unit is on fan terraces mantled by eolian material. Areas are irregular in shape and are 100 to 10,000 acres in size. The present vegetation is trees with open areas of grass. Elevation is 7,200 to 8,100 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

This unit is 40 percent Royosa sand, 1 to 5 percent slopes, and 40 percent Loarc loamy fine sand, 1 to 5 percent slopes.

Included in this unit are small areas of Augustine, Telescope, and Datil soils throughout the unit. Included areas make up about 20 percent of the total acreage.

The Royosa soil is deep and excessively drained. It formed in eolian material. Typically, the surface layer is brown sand about 7 inches thick. The upper 19 inches of the underlying material is pale brown coarse sand, the next 17 inches is pale brown sand, and the lower part to a depth of 60 inches or more is brown loamy sand.

Permeability of the Royosa soil is very rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is very high.

The Loarc soil is deep and well drained. It formed in alluvium. Typically, the surface layer is brown loamy fine sand about 23 inches thick. The upper 28 inches of the subsoil is reddish yellow sandy clay loam, and the lower part to a depth of 60 inches or more is reddish yellow sandy clay loam.

Permeability of the Loarc soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is very high.

This unit is used for livestock grazing, wildlife habitat, and wood products.

The potential natural plant community on this unit is characterized by blue grama, Indian ricegrass, spike dropseed, sand dropseed, and bottlebrush squirreltail. Pinyon and ponderosa pine are present in some areas of the unit. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 275 pounds in unfavorable years. If the plant community deteriorates, Indian ricegrass and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, sand dropseed, threeawn, and sand sagebrush. Deterioration of the plant community commonly results in severe wind erosion and the formation of sand dunes.

This unit is suited to such management practices as proper grazing use, planned grazing sysytems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of Indian ricegrass and bottlebrush squirreltail.

479—Augustine fine sandy loam, 1 to 6 percent slopes. This deep, well drained soil is on bajadas. It formed in alluvium derived dominantly from rhyolitic tuff and lava. Areas are irregular in shape and are 250 to 10,000 acres in size. The present vegetation is grass. Elevation is 6,500 to 7,500 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is brown fine sandy loam about 3 inches thick. The subsoil is brown clay loam about 34 inches thick. The substratum to a depth of 60 inches or more is pinkish gray clay loam.

Included in this unit are small areas of Manzano soils in swales, Datil soils and soils that are similar to this Augustine soil but have a sandy clay loam subsoil and are throughout the unit, and Dioxice and Pena soils in the more steeply sloping areas. Included areas make up about 20 percent of the total acreage.

Permeability of this Augustine soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by western wheatgrass, blue grama, spike muhly, and bottlebrush squirreltail. The average annual production of air-dry vegetation ranges from 950 pounds per acre in favorable years to 325 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, spike muhly, and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, ring muhly, threeawn, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass, bottlebrush squirreltail, and spike muhly.

482—Deama, dry-Rock outcrop complex, 10 to 55 percent slopes. This map unit is on cuestas and hogbacks. Areas are irregular in shape and are 1,000 to 3,000 acres in size. The present vegetation is grass with areas of pinyon and juniper. Elevation is 5,800 to 7,700 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 54 to 57 degrees F, and the average frost-free period is 140 to 180 days.

This unit is 50 percent Deama extremely gravelly sandy loam, 10 to 55 percent slopes, and 20 percent limestone Rock outcrop. The Deama soil is on dip slopes of cuestas, on hogbacks, and on scarp faces, and the Rock outcrop is on ledges and ridges.

Included in this unit are small areas of Winona and Pinon soils throughout the unit, Lozier soils on warm exposures below an altitude of 6,300 feet, and a moderately deep soil that is less than 35 percent rock fragments and is throughout the unit. Included areas make up about 30 percent of the total acreage.

The Deama soil is very shallow and shallow and is well drained. It formed in alluvium derived dominantly from limestone. Typically, the surface layer is brown extremely gravelly sandy loam about 2 inches thick. The underlying material to a depth of 12 inches is pale brown and brown very gravelly loam. Limestone is at a depth of 12 inches.

Permeability of the Deama soil is moderate. Available water capacity is very low. Effective rooting depth is 6 to 20 inches. Runoff is rapid, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

Rock outcrop is exposed areas of limestone and siltstone. There is little if any vegetation in these areas. Surface runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by New Mexico feathergrass, black grama, blue grama, and sideoats grama. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are little bluestem, mountainmahogany, and oak. The average annual production of air-dry vegetation ranges from 850 pounds per acre in favorable years to 350 pounds in unfavorable years. If the plant community deteriorates, New Mexico feathergrass, black grama, and sideoats grama decrease and there is an increase in plants such as threeawn, wolftail, broom snakeweed, and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, and optimal placement of salt for livestock. The Deama soil has limited suitability for rangeland management practices such as fencing because of the very shallow and shallow depth to limestone and slope. Parts of this unit are inaccessible and are not suitable for livestock use. Grazing management should be designed to increase the productivity and reproduction of New Mexico feathergrass.

484—Mion-San Mateo-Rock outcrop association, 1 to 10 percent slopes. This map unit is on alluvial fans and in swales below sandstone hills and cuestas. Areas are irregular in shape and are 100 to 2,500 acres in size. The present vegetation is grass, shrubs, and a few scattered oneseed junipers. Elevation is 5,500 to 7,800 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 150 to 160 days.

This unit is 30 percent Mion gravelly sandy loam, 2 to 10 percent slopes; 30 percent San Mateo sandy loam, 1 to 5 percent slopes; and 20 percent Rock outcrop. The Mion soil is on alluvial fans and knolls adjacent to Rock outcrop, the San Mateo soil is in swales and on the larger alluvial fans, and the Rock outcrop is on hills and cuestas.

Included in this unit are small areas of Travessilla soils and soils that are similar to Travessilla soils but are shallow and moderately deep and have a moderately fine textured subsoil; soils that are similar to the San Mateo soils but have bedrock at a depth of 40 to 60 inches; Sparant soils in swale; Gullied land and Badland near swales; and soils that are similar to the Mion soil but are moderately deep. These included soils are throughout the unit. Included areas make up about 20 percent of the total acreage.

The Mion soil is shallow and well drained. It formed in alluvium derived dominantly from shale and sandstone. Typically, the surface layer is pale brown gravelly sandy loam about 2 inches thick. The upper 5 inches of the underlying material is light yellowish brown clay loam, and the lower part to a depth of 16 inches is light brownish gray and grayish brown silty clay. Soft shale or claystone is at a depth of 16 inches.

Permeability of the Mion soil is very slow. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The San Mateo soil is deep and well drained. It formed in alluvium derived dominantly from sandstone and shale. Typically, the surface layer is light yellowish brown sandy loam about 2 inches thick. The upper 8 inches of the underlying material is yellowish brown sandy clay loam, the next 37 inches is light olive brown and light yellowish brown sandy clay loam, and the lower part to a depth of 60 inches or more is light yellowish brown clay loam.

Permeability of the San Mateo soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. In some pedons sandstone occurs between depths of 40 and 60 inches. Rare periods of flooding occur on this soil during high intensity thunderstorms in summer.

Rock outcrop consists of exposed areas of sandstone. There is little if any vegetation in these areas. Surface runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Mion soil is characterized mainly by black grama, sideoats grama, blue grama, sand dropseed, and New Mexico feathergrass. The average annual production of air-dry understory vegetation ranges from 1,000 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats, and New Mexico feathergrass decrease and there is an increase in plants such as sand dropseed, hairy grama, wolftail, skunkbush sumac, and broom snakeweed.

The potential natural plant community on the San Mateo soil is characterized mainly by blue grama, sideoats grama, black grama, and galleta. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are vine-mesquite and bottlebrush squirreltail. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 475 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, black grama, and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, ring muhly, galleta, and sand dropseed.

The Mion soil is suited to such management practices as proper grazing use, planned grazing systems, and livestock watering facilities. It has limited suitability for rangeland management practices such as livestock water pipelines and fencing because of the shallow depth to shale.

The San Mateo soil is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and New Mexico feathergrass.

491—Riverwash. This map unit consists of unstable, sandy, silty, clayey, or gravelly sediment that is frequently flooded and reworked. Areas are long and narrow and are 100 to 1,000 acres in size. Elevation is 4,400 to 7,800 feet.

This unit is extremely unstable because of its susceptibility to both wind and water erosion. Saltcedar is present in some areas. It is feasible to install pipelines for providing water for livestock and fences; however, there is a risk that such facilities could be washed out during a severe flash flood.

510—Guy-Dioxice-Pena association, 1 to 8 percent slopes. This map unit is on bajadas and fan terraces. Areas are irregular in shape and are 1,200 to 5,100 acres in size. The present vegetation is grass. Elevation is 6,300 to 7,500 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

This unit is 35 percent Guy sandy loam, 1 to 6 percent slopes; 30 percent Dioxice loam, 1 to 4 percent slopes; and 20 percent Pena sandy loam, 2 to 8 percent slopes. The Guy soil is on fan terraces and bajadas, the Dioxice soil is on the lower positions on fan terraces and bajadas, and the Pena soil is on the higher positions of bajadas.

Included in this unit are small areas of Pena soils in areas where slopes are more than 8 percent, Datil soils on fan terraces, and Manzano soils in drainageways. Included areas make up about 15 percent of the total acreage.

The Guy soil is deep and well drained. It formed in alluvium derived from rhyolitic tuff and lava. Typically, the surface layer is dark grayish brown sandy loam about 4 inches thick. The subsurface layer is dark brown sandy loam about 5 inches thick. The subsoil is brown cobbly loam about 5 inches thick. The substratum to a depth of 60 inches or more is light yellowish brown and light brown cobbly sandy loam.

Permeability of the Guy soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

The Dioxice soil is deep and well drained. It formed in alluvium derived from volcanic rock. Typically, the surface layer is dark brown loam about 3 inches thick. The subsurface layer is dark brown sandy clay loam about 5 inches thick. The upper 16 inches of the underlying material is brown and light brown sandy clay loam, and the lower part to a depth of 60 inches or more is pinkish gray cobbly loam.

Permeability of the Dioxice soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Pena soil is deep and well drained. It formed in alluvium derived from volcanic rock. Typically, the surface layer is brown sandy loam about 2 inches thick. The subsurface layer is brown fine sandy loam about 9 inches thick. The subsoil is light yellowish brown gravelly sandy loam about 11 inches thick. The upper 12 inches of the substratum is white very gravelly sandy loam, and the lower part to a depth of 60 inches or more is very pale brown very gravelly sandy loam.

Permeability of the Pena soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is moderate, and the hazard of water erosion is slight. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Guy and Dioxice soils is characterized mainly by blue grama, western wheatgrass, spike muhly, and winterfat. Black grama is present in some of the warmer areas of this unit and on south aspects. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 350 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, spike muhly, and black grama decrease and there is an increase in plants such as blue grama, ring muhly, sand dropseed, and broom snakeweed.

The potential natural plant community on the Pena soil is characterized by blue grama, New Mexico feathergass, western wheatgrass, wolftail, and winterfat. Black grama is present in some of the warmer areas and on south exposures aspects. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 350 pounds in unfavorable years. If the plant community deteriorates, New Mexico feathergrass, western wheatgrass, and black grama decrease and there is an increase in plants such as blue grama, ring muhly, sand dropseed, and broom snakeweed.

This unit is suited to such rangeland management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of New Mexico feathergrass and western wheatgrass.

530—Loarc loamy sand, 1 to 12 percent slopes. This deep, well drained soil is on fan terraces. It formed in alluvium and eolian material. Areas are irregular in shape and are 500 to 5,000 acres in size. The present vegetation is pinyon and juniper with open areas of grass. Elevation is 7,000 to 7,500 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is brown and dark brown loamy sand about 14 inches thick. The subsoil is brown sandy clay loam about 9 inches thick. The upper 13 inches of the substratum is brown sandy loam, and the lower part to a depth of 60 inches or more is reddish yellow gravelly sandy loam.

Included in this unit are small areas of Royosa soils on dunes between ridges, Datil soils on gentle slopes, and Telescope soils at the edge of the Plains of San Agustin. Included areas make up about 15 percent of the total acreage.

Permeability of this Loarc soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is very high.

This unit is used for livestock grazing, fuelwood, and wildlife habitat.

The potential natural plant community on this unit is characterized by blue grama, Indian ricegrass, western wheatgrass, sand dropseed, and pinyon. The average annual production of air-dry vegetation ranges from 875 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, Indian ricegrass and western wheatgrass decrease and there is an increase in plants such as blue grama, sand dropseed, ring muhly, pinyon, and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Brush management is an acceptable practice on the Loarc soil when accompanied by deferment from grazing. Grazing management should be designed to increase the productivity and reproduction of Indian ricegrass and western wheatgrass.

This unit has fair suitability for the production of wood products such as firewood and fenceposts. The site index for pinyon and juniper ranges from 17 to 53. This unit can produce from 2 to 8 cords of wood per acre in a stand of trees that averages 5 inches in diameter at a height of 1 foot.

540—Goldust gravelly sandy loam, 2 to 8 percent slopes. This deep, well drained soil is on bajadas. It formed in alluvium derived dominantly from rhyolitic tuff and lava. Areas are irregular in shape and are 400 to 6,400 acres in size. The present vegetation is grass with scattered trees. Elevation is 6,300 to 7,400 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is brown gravelly sandy loam about 4 inches thick. The subsurface layer is brown very cobbly loam 8 inches thick. The upper 10 inches of the subsoil is brown very cobbly loam, and the lower 13 inches is brown and strong brown very gravelly clay. The substratum to a depth of 60 inches or more is strong brown very gravelly sandy clay.

Included in this unit are small areas of Manzano and Glenberg soils in drainageways, Datil soils throughout the unit, and Millett and Sedillo soils on the lower positions. Included areas make up about 20 percent of the total acreage.

Permeability of this soil is slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, blue grama, galleta, bottlebrush squirreltail, and soaptree yucca. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 300 pounds in unfavorable years. As the plant community deteriorates, black grama, bottlebrush squirreltail, little bluestem, and sideoats grama decrease and there is an increase in plants such as blue grama, ring muhly, and threeawn.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of black grama.

549—Ladron very gravelly sandy loam, 1 to 15 percent slopes. This deep, well drained soil is on knolls and fan terraces. It formed in alluvium. Areas are irregular in shape and are 100 to 2,500 acres in size. The present vegetation is grass. Elevation is 5,500 to 7,000 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 150 to 170 days.

Typically, the surface layer is pale brown very gravelly sandy loam about 2 inches thick. The upper part of the subsoil is light yellowish brown and very pale brown very gravelly loam about 29 inches thick, the next layer is very pale brown very gravelly sandy loam about 16 inches thick, and the lower part to a depth of 60 inches or more is very pale brown very gravelly loam.

Included in this unit are small areas of Cascajo soils on summits of knolls, Harvey soils in drainageways and on foot slopes of knolls, Lapdun soils on summits of knolls in the southwestern part of the survey area, and Clovis soils in drainageways west of Ladron Peak. Included areas make up about 25 percent of the total acreage.

Permeability of the Ladron soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, New Mexico feathergrass, sideoats grama, and blue grama. The average annual production of air-dry vegetation ranges from 1,300 pounds per acre in favorable years to 550 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as threeawn, ring muhly, broom snakeweed and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and New Mexico feathergrass.

555—Datil gravelly loam, 15 to 25 percent slopes. This deep, well drained soil is on dissected hills and ridges. It formed in alluvium derived from volcanic rock. Areas are irregular in shape and are 200 to 4,000 acres in size. The present vegetation is grass. Elevation is 6,100 to 6,800 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is dark brown gravelly loam about 3 inches thick. The subsoil is dark brown gravelly clay loam about 12 inches thick. The substratum to a depth of 60 inches or more is light brownish gray loam.

Included in this unit are small areas of Goldust soils on the lower positions of hills, Manzano soils in drainageways, Cascajo and Pena soils on ridge crests, Datil soils that do not have a gravelly surface layer and are throughout the unit, and Datil soils that have slopes of more than 25 percent. Included areas make up about 25 percent of the total acreage.

Permeability of this Datil soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, sideoats grama, New Mexico feathergrass, blue grama, and galleta. The average annual production of air-dry vegetation ranges from 1,300 pounds per acre in favorable years to 550 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as blue grama, threeawn, ring muhly, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and New Mexico feathergrass.

556—Loarc-Datil-Majada association, 2 to 12 percent slopes. This map unit is on fan terraces and bajadas. Areas are irregular in shape and are 250 to 2,100 acres in size. The present vegetation is grass, pinyon, and juniper. Elevation is 6,400 to 7,600 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

This unit is 35 percent Loarc sandy loam, 2 to 8 percent slopes; 30 percent Datil loam, 4 to 12 percent slopes; and 20 percent Majada loam, 4 to 6 percent slopes. The Loarc soil is on the lower fan terraces, the Datil soil is on the upper fan terraces and bajadas, and the Majada soil is on bajadas and upper fan terraces at the foot of escarpments.

Included in this unit are small areas of Augustine soils on the lower fan terraces and Manzano soils in drainageways. Included areas make up about 15 percent of the total acreage.

The Loarc soil is deep and well drained. It formed in alluvium and eolian material. Typically, the surface layer is brown sandy loam about 3 inches thick. The upper 16 inches of the subsoil is dark brown sandy clay loam, and the lower 13 inches is brown clay loam. The substratum to a depth of 60 inches or more is yellowish brown sandy loam.

Permeability of the Loarc soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Datil soil is deep and well drained. It formed in alluvium derived from volcanic rock. Typically, the surface layer is brown loam about 3 inches thick. The upper 4 inches of the subsoil is brown loam, and the lower 15 inches is brown gravelly clay loam. The upper 18 inches of the substratum is pinkish gray loam, and the lower part to a depth of 60 inches or more is pinkish gray gravelly sandy clay loam.

Permeability of the Datil soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Majada soil is deep and well drained. It formed in alluvium derived dominantly from volcanic rock. Typically, the surface layer is dark brown loam about 3 inches thick. The upper 4 inches of the subsoil is dark brown loam, the lower 14 inches is dark brown and brown very gravelly clay loam. The upper 19 inches of the substratum is pinkish gray very gravelly loam, and the lower part to a depth of 60 inches or more is pinkish gray gravelly sandy clay loam.

Permeability of the Majada soil is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Loarc and Datil soils is characterized by blue grama, western wheatgrass, bottlebrush squirreltail, and spike muhly. The average annual production of air-dry vegetation ranges from 950 pounds per acre in favorable years to 375 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, bottlebrush squirreltail, and spike muhly decrease and there is an increase in plants such as blue grama, ring muhly, and broom snakeweed.

The potential natural plant community on the Majada soil is characterized mainly by blue grama, wolftail, western wheatgrass, bottlebrush squirreltail, and scattered oneseed juniper. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 350 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass and bottlebrush squirreltail decrease and there is an increase in plants such as blue grama, wolftail, ring muhly, broom snakeweed, and oneseed juniper.

This unit is susceptible to invasion by pinyon on the Majada soil and oneseed juniper and pinyon on the Loarc and Datil soils. In some areas dense stands of pinyon and juniper may become established. With proper woodland management, a limited wood crop can be produced in these areas. Understory production can be increased by reducing the density of the canopy.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Brush management is an acceptable practice when accompanied by deferment from grazing. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass, bottlebrush squirreltail, and spike muhly.

570—La Fonda-Torriorthents, ustic-Rock outcrop association, 1 to 15 percent slopes. This map unit is on small, low cuestas and adjacent fan terraces. Areas are irregular in shape and are 100 to 1,500 acres in size. The present vegetation is grass and oneseed juniper. Elevation is 5,800 to 6,200 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 150 to 165 days.

This unit is 45 percent La Fonda sandy loam, 1 to 5 percent slopes, 25 percent Torriorthents, ustic, 1 to 15 percent slopes, and 15 percent Rock outcrop. The La Fonda soil is on small fan terraces and in swales below and between areas of Rock outcrop. Rock outcrop and Torriorthents, ustic, are on cuesta dip slopes and scarp faces.

Included in this unit are small areas of La Fonda soils that have bedrock at a depth of 40 to 60 inches, areas of shallow soils that have a high content of rock fragments and are adjacent to areas of Rock outcrop, soils that are similar to the La Fonda soil but are moderately deep and are throughout the unit, and Navajo soils in swales. Included areas make up about 15 percent of the total acreage.

The La Fonda soil is deep and well drained. It formed in alluvium derived dominantly from sandstone and shale. Typically, the surface layer is brown sandy loam about 3 inches thick. The subsoil is brown loam about 18 inches thick. The substratum to a depth of 60 inches or more is strong brown loam.

Permeability of the La Fonda soil is moderate. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

Torriorthents, ustic, are very shallow and well drained. They formed in eolian material. No single profile of these soils is typical, but one commonly observed in the survey area has a surface layer of brown gravelly sandy loam about 1 inch thick. Sandstone is at a depth of 1 inch.

Permeability of Torriorthents, ustic, is rapid. Available water capacity is very low. Effective rooting depth is 1 to 3 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

Rock outcrop consists of exposed areas of sandstone and siltstone. It occurs as exposed bedding planes on the cuesta dip slopes and as small cliffs on cuesta scarp faces. Some areas of Rock outcrop are shale and igneous intrusions of basaltic andesite that are present as dikes and sills.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the La Fonda soil is characterized mainly by western wheatgrass, blue grama, bottlebrush squirreltail, and galleta. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are spike muhly and fourwing saltbush. The average annual production of air-dry vegetation ranges from 950 pounds per acre in favorable years to 375 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, bottlebrush squirreltail, and spike muhly decrease and there is an increase in plants such as blue grama, ring muhly, galleta, and rabbitbrush.

The La Fonda soil is suited to such management practices as proper grazing use, plannned grazing systems, livestock watering facilities, and fencing. Because of the amount and distribution of Rock outcrop, parts of this unit are not suitable for practices such as proper grazing use, planned grazing systems, fencing, and installing pipelines for providing water for livestock because of the presence of sandstone on or near the surface. Grazing management should be designed to increase the productivity and reporduction of western wheatgrass and bottlebrush squirreltail.

575—Flaco stony loam, 1 to 8 percent slopes. This moderately deep, well drained soil is on basalt capped mesas. It formed in alluvium derived dominantly from basalt. Areas are rounded to elongated in shape and are 300 to 2,300 acres in size. The present vegetation is grass and scattered junipers. Elevation is 5,900 to 7,300 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 54 to 57 degrees F, and the average frost-free period is 160 to 180 days.

Typically, the surface layer is brown stony loam about 2 inches thick. The subsoil is dark yellowish brown and brown clay loam about 10 inches thick. The substratum is pale brown and pink gravelly clay loam and gravelly loam about 12 inches thick. Basalt is at a depth of 24 inches.

Included in this unit are small areas of a soil that is similar to this Flaco soil but is shallow to basalt or an indurated caliche horizon, shallow soils that are similar to this Flaco soil but have a darker colored surface layer and have slopes of 8 to 30 percent, and basalt Rock outcrop along the mesa rims. Included areas make up about 30 percent of the total acreage.

Permeability of this soil is moderately slow. Available water capacity is very low to low. Effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by blue grama, western wheatgrass, spike muhly, and bottlebrush squirreltail. Pinyon and oneseed juniper are present in some scattered stands. The average annual production of air-dry vegetation ranges from 1,100 pounds per acre in favorable years to 425 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass and spike muhly decrease and there is an increase in plants such as blue grama, ring muhly, broom snakeweed, pinyon, and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Pipelines for providing water for livestock are difficult to install because of the shallow depth to basalt. The Flaco soil has limited suitability for range management practices because of the stony surface. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass and spike muhly.

580—Landavaso sandy loam, 1 to 5 percent slopes. This deep, well drained soil is in drainageways and on fan terraces. It formed in gravelly alluvium derived dominantly from rhyolitic tuff and lava. Areas are irregular in shape and are 115 to 3,300 acres in size. The present vegetation is grass. Elevation is 6,900 to 7,200 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 47 to 54 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is brown sandy loam about 3 inches thick. The upper 7 inches of the subsoil is brown sandy loam, and the lower 17 inches is yellowish brown gravelly sandy clay loam. The upper 14 inches of the substratum is yellowish brown very gravelly loamy sand, and the lower part to a depth of 60 inches or more is brown very gravelly coarse sand.

Included in this unit are small areas of Telescope soils throughout the unit, a soil that is similar to this Landavaso soil but is coarser in texture and is throughout the unit, and Manzano soils in swales. Included areas make up about 25 percent of the total acreage.

Permeability of this soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by blue grama, western wheatgrass, bottlebrush squirreltail, and spike muhly. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are wolftail and fourwing saltbush. The average annual production of air-dry vegetation ranges from 950 pounds per acre in favorable years to 375 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, bottlebrush squirreltail, and spike muhly decrease and there is an increase in plants such as blue grama, threeawn, sand dropseed, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass and bottlebrush squirreltail.

582—Tanbark-Winona complex, 15 to 45 percent slopes. This map unit is on hills and cuestas. Areas are irregular in shape and are 500 to 3,700 acres in size. The present vegetation is grass with scattered juniper trees. Elevation is 5,900 to 7,100 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 50 percent Tanbark very fine sandy loam, 20 to 45 percent slopes, and 25 percent Winona very flaggy loam, 15 to 30 percent slopes. The Tanbark soil is on the sides of hogbacks and scarp faces of cuestas. The Winona soil is on dip slopes of cuestas and on hills.

Included in this unit are small areas of Deama and Pinon soils on the ridge crests and dip slopes of cuestas, Netoma and Rayohill soils on the lower positions associated with the Tanbark soil, Tanbark and Winona soils that have slopes of 5 to 15 percent, and Rock outcrop in the form of ledges and small escarpments throughout the unit. Included areas make up about 25 percent of the total acreage.

The Tanbark soil is very shallow and shallow and is well drained. It formed in alluvium derived dominantly from gyspum. Typically, the surface layer is very pale brown very fine sandy loam about 1 inch thick. The upper 2 inches of the underlying material is very pale brown loam, the next 7 inches is white silt loam, and the lower part to a depth of 18 inches is very pale brown sandy loam. Gypsum is at a depth of 18 inches.

Permeability of the Tanbark soil is moderate. Available water capacity is very low. Effective rooting depth is 4 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

The Winona soil is very shallow and shallow and is well drained. It formed in alluvium and colluvium derived dominantly from limestone. Typically, the surface layer is brown very flaggy loam about 2 inches thick. The underlying material to a depth of 12 inches is brown and light brown very gravelly loam. Limestone is at a depth of 12 inches.

Permeability of the Winona soil is moderate. Available water capacity is very low. Effective rooting depth is 7 to 20 inches. Runoff is rapid, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Tanbark soil is characterized mainly by black grama, gyp dropseed, and scattered oneseed juniper. The average annual production of air-dry vegetation ranges from 350 pounds per acre in favorable years to 150 pounds in unfavorable years. If the plant community deteriorates, black grama decreases and there is an increase in plants such as gyp dropseed, Bigelow sagebrush, and mariola.

The potential natural plant community on the Winona soil is characterized mainly by New Mexico feathergrass, New Mexico muhly, sideoats grama, and black grama. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are Mormon-tea and oneseed juniper. The average annual production of air-dry vegetation ranges from 850 pounds per acre in favorable years to 350 pounds in unfavorable years. If the plant community deteriorates, New Mexico feathergrass, New Mexico muhly, and sideoats grama decrease and there is an increase in plants such as slim tridons, banana yucca, and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, optimal placement of salt for livestock, and livestock trail construction. It has limited suitability for rangeland management practices such as livestock watering facilities and fencing because of its inaccessibility, slope, and the very shallow and shallow depth of the soils. Grazing management should be designed to increase the productivity and reproduction of New Mexico feathergrass, sideoats grama, and black grama.

585—Rock outcrop-Travessilla complex, 1 to 10 percent slopes. This map unit is on cuestas and small mesas. Areas are irregular in shape and are 100 to 3,000 acres in size. The present vegetation is grass and oneseed juniper. Elevation is 6,000 to 8,000 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 150 to 160 days.

This unit is 45 percent Rock outcrop and 40 percent Travessilla gravelly fine sandy loam, 1 to 10 percent slopes. These soils occur in a complex pattern on the mesa tops and the long dip slopes of cuestas.

Included in this unit are small areas of a soil that is 1 to 4 inches thick over bedrock and supports a plant cover, Mion soils on the short scarp faces of cuestas and below the sandstone Rock outcrop on the mesa tops, clayey and loamy Lithic Haplargids throughout the unit, and soils that are similar to the Travessilla soil but are moderately deep and are adjacent to small swales. Included areas make up about 15 percent of the total acreage.

Rock outcrop is exposed areas of sandstone. It occurs as exposed bedding planes on the cuesta dip slopes and as small cliffs on the mesas and cuesta scarp faces and supports little if any vegetation.

The Travessilla soil is very shallow and shallow and well drained. It formed in alluvium and eolian material derived dominantly from sandstone. Typically, the surface layer is light yellowish brown gravelly fine sandy loam about 3 inches thick. The underlying material is brown and pale brown gravelly fine sandy loam about 10 inches thick. Hard sandstone is at a depth of 13 inches.

Permeability of the Travessilla soil is moderately rapid. Available water capacity is very low. Effective rooting depth is 6 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, blue grama, sideoats grama, and little bluestem. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are New Mexico feathergrass and oneseed juniper. The average annual production of air-dry vegetation ranges from 700 pounds per acre in favorable years to 275 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, black grama, little bluestem, and New Mexico feathergrass decrease and there is an increase in plants such as blue grama, galleta, threeawn, and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, providing salt for livestock, and livestock watering facilities. Fencing and installing pipelines for providing water for livestock are difficult because sandstone is at or near the surface. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, little bluestem, and New Mexico feathergrass.

600—Elbutte-Courthouse Variant-Rock outcrop complex, 5 to 45 percent slopes. This map unit is on cuestas, hogbacks, and mesa escarpments. Areas are irregular in shape and are 200 to 2,000 acres in size. The present vegetation is grass and shrubs. Elevation is 4,800 to 5,500 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 40 percent Elbutte gravelly clay loam, 20 percent Courthouse Variant very gravelly fine sandy loam, and 15 percent Rock outcrop. The Elbutte soil is on scarp faces of cuestas, hogbacks, and mesas and in depressional areas between cuestas. The Courthouse Variant soil is on dip slopes of cuestas and hogbacks. Rock outcrop is present as small vertical cliffs on scarp faces.

Included in this unit are small areas of soils that are similar in texture to Turney soils but have shale bedrock at a depth of 40 to 60 inches and are in swales between cuestas, soils that are similar in texture to Elbutte and Courthouse Variant soils but that are redder, Elbutte soils that have a bouldery, very stony or very flaggy clay loam surface layer and are on scarp faces of cuestas below sandstone Rock outcrop, Nickel and Pajarito soils on small alluvial fans between cuestas, coal mine dumps near the old town of Carthage, soils that are similar to the Elbutte soil but are moderately deep to shale, and Gullied land in swales and arroyo areas. Included areas make up about 25 percent of the total acreage.

The Elbutte soil is very shallow and shallow and well drained. It formed in alluvium derived dominantly from shale. Typically, the surface layer is pale brown gravelly clay loam about 2 inches thick. The upper 4 inches of the underlying material is light yellowish brown shaly silty clay loam, and the lower part to a depth of 16 inches is light yellowish brown extremely shaly silty clay loam. Soft sandstone and shale are at a depth of 16 inches.

Permeability of the Elbutte soil is slow. Available water capacity is very low. Effective rooting depth is 8 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. Some areas of Elbutte are strongly alkaline.

The Courthouse Variant soil is very shallow and shallow and well drained. It formed in alluvium derived dominantly from sandstone. Typically, the surface layer is light yellowish brown very gravelly fine sandy loam about 2 inches thick. The underlying material is pale brown very cobbly sandy clay loam about 5 inches thick. Sandstone is at a depth of 7 inches.

Permeability of the Courthouse Variant soil is moderate. Available water capacity is very low. Effective rooting depth is 4 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of soil blowing is high.

Rock outcrop is sandstone. There is little if any vegetation in these areas. Surface runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Elbutte soil is characterized mainly by tobosa, alkali sacaton, and sideoats grama. The average annual production of air-dry vegetation ranges from 400 pounds per acre in favorable years to 200 pounds in unfavorable years. If the plant community deteriorates, alkali sacaton and sideoats grama decrease and there is an increase in plants such as fluffgrass and sand dropseed.

The potential natural plant community on the Courthouse Variant soil is characterized mainly by black grama, sideoats grama, little bluestem, and bush muhly. The average annual production of air-dry vegetation ranges from 350 pounds per acre in favorable years to 150 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, little bluestem, and bush muhly decrease and there is an increase in plants such as threeawn, fluffgrass, broom snakeweed, and creosotebush.

This unit is suited to such management practices as proper grazing use, planned grazing systems, and providing salt for livestock. The Elbutte and Courthouse Variant soils have limited suitability for range management practices such as livestock watering facilities and fencing because of the very shallow and shallow depth to bedrock. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and bush muhly.

601—Oscura silty clay loam, 1 to 3 percent slopes. This deep, well drained soil is on flood plains of intermittent drainageways. It formed in alluvium derived dominantly from siltstone and shale. Areas are long and narrow in shape and are 200 to 1,000 acres in size. The present vegetation is grass. Elevation is 5,100 to 5,700 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is reddish brown silty clay loam about 9 inches thick. The underlying material is reddish brown silty clay about 32 inches thick. Below this to a depth of 60 inches or more is a buried subsoil of reddish brown silty clay loam.

Included in this unit are small areas of Barana and Yesum soils on small terrace remnants, soils that are similar to the Oscura soil but have a surface layer of loam, soils that are similar to the Oscura soil but have less clay in the profile, soils that are similar to the Oscura soil but are cooler and are in Wash Hale Canyon, and gullied land adjacent to arroyo channels. Included areas make up about 25 percent of the total acreage.

Permeability of this soil is slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high. This soil is slightly saline and is subject to frequent periods of flooding following convective

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by giant sacaton, alkali sacaton, galleta, vine-mesquite, and fourwing saltbush. The average annual production of air-dry vegetation ranges from 4,000 pounds per acre in favorable years to 800 pounds in unfavorable years. If the plant community deteriorates, giant sacaton, vine-mesquite, and fourwing saltbush decrease and there is an increase in plants such as alkali sacaton, galleta, and mat muhly. In areas that are severely deteriorated, this unit is highly susceptible to gullying. There are large barren areas in that production is drastically lower.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, fencing, and grade stabilization and erosion control structures. Grazing management should be designed to increase the productivity and reproduction of giant sacaton.

603—Wink-Dona Ana loamy sands, 1 to 3 percent slopes. This map unit is on plains and bajadas. Areas are irregular in shape and are 1,000 to 3,000 acres in size. The present vegetation is grass. Elevation is 5,000 to 5,400 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 55 percent Wink loamy sand, 1 to 3 percent slopes, and 20 percent Dona Ana loamy sand, 1 to 3 percent slopes. The components of this unit are so intricately intermingled that it was not possible to map them separately at the scale used.

Included in this unit are small areas of Pajarito, Berino, and Turney soils throughout the unit. Included areas make up about 25 percent of the total acreage.

The Wink soil is deep and well drained. It formed in alluvial and eolian material. Typically, the surface layer is brown loamy sand about 2 inches thick. The upper 28 inches of the underlying material is brown and light brown sandy loam, the next 12 inches is pink light loam, and the lower part to a depth of 60 inches or more is pink, stratified loam and fine sandy loam.

Permeability of the Wink soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is very high.

The Dona Ana soil is deep and well drained. It formed in alluvium. Typically, the surface layer is reddish brown loamy sand about 3 inches thick. The upper 13 inches of the subsoil is reddish brown sandy clay loam, and the lower 12 inches is light brown sandy loam. The substratum to a depth of 60 inches or more is pink sandy loam and fine sandy loam.

Permeability of the Dona Ana soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is very high. This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Wink soil is characterized mainly by black grama, Indian ricegrass, sand dropseed, mesa dropseed, and blue grama. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are yucca and bush muhly. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, Indian ricegrass, and bush muhly decrease and there is an increase in plants such as threeawn, sand dropseed, yucca, and broom snakeweed.

The potential natural plant community on the Dona Ana soil is characterized mainly by black grama, bush muhly, galleta, bottlebrush squirreltail, and blue grama. The average annual production of air-dry vegetation ranges from 800 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, bush muhly, and bottlebrush squirreltail decrease and there is an increase in plants such as galleta, mesa dropseed, burrograss, and fourwing saltbush.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of black grama, bush muhly, and Indian ricegrass.

604—Turney loamy sand, 1 to 5 percent slopes. This deep, well drained soil is on bajadas and plains. It formed in mixed alluvial and eolian material. Areas are irregular in shape and are 200 to 20,000 acres in size. The present vegetation is grass and shrubs. Elevation is 4,800 to 5,400 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown loamy sand about 3 inches thick. The subsoil is brown and light brown sandy loam about 11 inches thick. The upper 38 inches of the substratum is pink and pinkish white sandy loam and sandy clay loam, and the lower part to a depth of 60 inches or more is light brown sandy clay loam.

Included in this unit are small areas of Turney loam, Dona Ana, and Berino soils and a deep, red soil that is high in content of clay and is in swales and slightly depresssional areas, a soil that is similar to this Turney soil but has 15 to 30 percent rock fragments in the profile and is on knolls and low ridges, Wink soils in areas of hummocky wind-worked deposits, soils that are similar to the Turney soil but have a higher content of organic matter and calcium carbonate, and loamy soils that are moderately deep to indurated caliche. Included areas make up about 35 percent of the total acreage.

Permeability of this Turney soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, Indian ricegrass, New Mexico feathergrass, mesa dropseed, and galleta. Other important plants present in smaller amounts than those characterizing the potential natural plant community are blue grama and bush muhly. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, Indian ricegrass, New Mexico feathergrass, and bush muhly decrease and there is an increase in plants such as sand dropseed, threeawn, galleta, and broom snakeweed

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of black grama, Indian ricegrass, and New Mexico feathergrass.

605—Armijo clay, moderately saline, 0 to 1 percent slopes. This deep, well drained soil is in old dry oxbow lakes of the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 100 to 700 acres in size. The present vegetation is thickets of saltcedar and willow. Elevation is 4,400 to 4,600 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown clay about 6 inches thick. The underlying material to a depth of 60 inches or more is brown and pale brown clay and silty clay.

Included in this unit are small areas of Belen, Gila, Glendale, and Anthony soils and small areas of Armijo soils that have a sandy loam or silt loam surface layer. Included areas make up about 25 percent of the total acreage.

Permeability of this Armijo soil is very slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. Some areas of this unit on the south end of the Elephant Butte Reservoir are subject to occasional periods of flooding in years of heavy runoff. This soil is moderately saline.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by alkali sacaton. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are giant sacaton, tobosa, vine-mesquite, and fourwing saltbush. The average annual production of air-dry vegetation ranges from 3,000 pounds per acre in favorable years to 1,500 pounds in unfavorable years. If the plant community deteriorates, giant sacaton, alkali sacaton, and vine-mesquite decrease and there is an increase in plants such as tobosa, inland saltgrass, and saltcedar. Severe deterioration of the potential natural plant community may result in nearly total domination by saltcedar.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of alkali sacaton.

606—Largo loam, 0 to 3 percent slopes. This deep, well drained soil is on flood plains and terraces. It formed in alluvium. Areas are long and narrow in shape and are 100 to 1,000 acres in size. The present vegetation is grass. Elevation is 4,760 to 5,400 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is reddish brown loam about 3 inches thick. The underlying material to a depth of 60 inches or more is reddish brown, stratified loam, clay loam, silty clay loam, and very fine sandy loam.

Included in this unit are small areas of a soil that is similar to the Largo soil but is less than 18 percent clay and is in the eastern part of the unit. Barana soils, in oxbows of Abo Arroyo; Gullied land, where Abo Arroyo and the Rio Grande come together; and Riverwash, on the bottom of Abo Arroyo. Included areas make up about 25 percent of the total acreage.

Permeability of this Largo soil is moderately slow. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by alkali sacaton, galleta, blue grama, and black grama. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are vine-mesquite and fourwing saltbush. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 500 pounds in unfavorable years. If the plant community deteriorates, black grama, blue grama, and vine-mesquite decrease and there is an increase in plants such as galleta, burrograss, ring muhly, and broom snakeweed. If deterioration of the plant community is severe, this unit is highly susceptible to gullying. Included in the unit are large barren areas that support much less vegetation.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, livestock watering facilities, grade stabilization structures, and erosion control systems. Critical area treatment is an acceptable practice on the unit when accompanied by deferment from grazing. Grazing management should be designed to increase the productivity and reproduction of alkali sacaton, black grama, and vine-mesquite.

610—Belen clay, 0 to 1 percent slopes. This deep, well drained soil is in old dry oxbow lakes of the Rio Grande flood plain. It formed in recent alluvium. Areas are irregular in shape and are 100 to 400 acres in size. The present vegetation is saltcedar and willow thickets. Elevation is 4,400 to 4,600 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown clay about 5 inches thick. The upper 19 inches of the underlying material is brown clay, the next 7 inches is light yellowish brown very fine sandy loam, and the lower part to a depth of 60 inches or more is pale brown very fine sand.

Included in this unit are small areas of Armijo, Gila, Anthony, and Saneli soils and small areas of soils that are similar to this Belen soil but have less than 20 inches of clay above the contrasting lower part of the substratum. Included areas make up about 35 percent of the total acreage.

Permeability of this Belen soil is very slow. Available water capacity is moderate Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Some areas of this map unit on the south end of the Elephant Butte Reservoir are subject to occasional periods of flooding in years of heavy runoff. This unit is moderately saline.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by alkali sacaton. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are giant sacaton, tobosa, vine-mesquite, and fourwing saltbush. The average annual production of air-dry vegetation ranges from 3,000 pounds per acre in favorable years to 1,500 pounds in unfavorable years. If the plant community deteriorates, alkali sacaton, giant sacaton, and vine-mesquite decrease and there is an increase in plants such as tobosa, inland saltgrass, and saltcedar. Severe deterioration of the potential natural plant community may result in nearly total domination by saltcedar.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of alkali sacaton.

615—Anthony-Gila complex, 0 to 2 percent slopes. This map unit is in braided channel areas of the Rio Grande flood plain. Areas are irregular in shape and are 200 to 3,500 acres in size. The present vegetation is saltcedar, cottonwood, and willow thickets. Elevation is 4,400 to 4,600 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 35 percent Anthony fine sand, 0 to 2 percent slopes, and 30 percent Gila fine sandy loam, 0 to 2 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Anthony soils that have a sandy loam or silt loam surface layer; Gila soils that have a clay loam or silt loam surface layer; Anthony and Gila soils that are moderately saline or strongly saline; Brazito, Agua, and Belen soils; and Anthony and Gila soils that have clay layers in the substratum. These included areas are throughout the unit. Also included are areas of Riverwash in old river channels. Included areas make up about 35 percent of the total acreage.

The Anthony soil is deep and well drained. It formed in recent alluvium. Typically, the surface layer is brown fine sand about 2 inches thick. The upper 5 inches of the underlying material is pale brown loamy very fine sand, the next 19 inches is very pale brown very fine sandy loam, and the lower part to a depth of 60 inches or more is pale brown very fine sand.

Permeability of the Anthony soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high. This unit is subject to rare periods of flooding during high intensity thunderstorms of short duration.

The Gila soil is deep and well drained. It formed in recent alluvium. Typically, the surface layer is pale brown fine sandy loam about 4 inches thick. The underlying material to a depth of 60 inches or more is stratified, pale brown, brown, and light yellowish brown very fine sand to silty clay loam.

Permeability of the Gila soil is high. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This unit is subject to rare periods of flooding.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by alkali sacaton. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are giant sacaton, tobosa, vine-mesquite, and fourwing saltbush. If the plant community deteriorates, alkali sacaton, giant sacaton, and vine-mesquite decrease and there is an increase in plants such as tobosa, inland saltgrass, and saltcedar. The average annual production of air-dry vegetation ranges from 3,000 pounds per acre in favorable years to 1,500 pounds in unfavorable years. Severe deterioration of the potential natural plant community may result in nearly total domination by saltcedar.

This unit is suited to such management practices as proper grazing use, planned grazing systems, and livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of alkali sacaton.

620—Bluepoint loamy fine sand, 1 to 9 percent slopes. This deep, excessively drained soil is on alluvial fans, plains, and terraces. It formed in alluvial and eolian material. Areas are elongated to irregular in shape and are 100 to 8,000 acres in size. The present vegetation is desert grasses and shrubs. Elevation is 4,500 to 5,100 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is light yellowish brown loamy fine sand about 5 inches thick. The upper 48 inches of the underlying material is light yellowish brown loamy fine sand, and the lower part to a depth of 60 inches or more is pink loamy sand.

Included in this unit are small areas of soils in the vicinity of Bingham that are similar to this Bluepoint soil but are redder, Wink and Pajarito soils on low ridges throughout the unit, Caliza soils on ridge sides, and Arizo soils in drainageways. Included areas make up about 25 percent of the total acreage.

Permeability of this Bluepoint soil is rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high. This soil is very hummocky and is in areas that are subject to wind erosion.

This unit is used for livestock grazing and wildlife habitat.

The potential native plant community on this unit varies depending on the location of the map unit and elevation. The potential natural plant community is characterized mainly by Indian ricegrass, giant dropseed, black grama, sand dropseed, and spike dropseed. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, Indian ricegrass and black grama decrease and there is an increase in plants such as dropseed, sand sagebrush, and broom dalea. Mesquite may invade. If severe deterioration of the potential natural plant community occurs, mesquite will dominate the stand and dunes will form. Perennial grass production is greatly reduced.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. It has limited suitability for rangeland management practices such as mechanical brush control because of the very high hazard of soil blowing. Chemical brush control is an acceptable practice on the Bluepoint soil when accompanied by deferment from grazing. Grazing management should be designed to increase the productivity and reproduction of Indian ricegrass and black grama.

621—Arizo-Riverwash complex, 0 to 5 percent slopes. This map unit is on valley floors and small alluvial fans associated with arroyos and drainageways. Slope is 0 to 5 percent. Areas are elongated to irregular in shape and are 100 to 3,000 acres in size. The present vegetation is shrubs and grasses. Elevation is 4,400 to 5,500 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 55 percent Arizo gravelly sandy loam, 0 to 5 percent slopes, and 30 percent Riverwash. The Arizo soil is on flood plains, small alluvial fans, and bars above the arroyo channels. The Riverwash is in arroyos and braided channel areas.

Included in this unit are small areas of soils that are similar to the Arizo soil but have 3 to 28 inches of loamy material on the surface and are throughout the unit, Bluepoint soils on small fans and stream terraces, and Nickel and Nolam soils on old stream terraces. Included areas make up about 15 percent of the total acreage.

The Arizo soil is deep and excessively drained. It formed in gravelly alluvium. Typically, the surface layer is yellowish brown gravelly sandy loam about 2 inches thick. The upper 13 inches of the underlying material is light brown gravelly loamy coarse sand, and the lower part to a depth of 60 inches or more is stratified, pink and light brown very gravelly coarse sand and very gravelly loamy coarse sand.

Permeability of the Arizo soil is very rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is subject to occasional periods of flooding during thunderstorms in summer.

Riverwash consists of loose sand, pebbles, cobbles, and stones in channels and on bars. It is devoid of vegetation and is subject to frequent periods of flooding.

This unit is used for livestock grazing and wildlife habitat.

The Arizo soil is unstable because of its position along arroyos. The potential natural plant community is variable but consists mainly of fourwing saltbush, Apacheplume, Mormon-tea, and dropseed but has probably not reached the state of dynamic equilibrium characteristic of potential natural plant communities. If the plant community deteriorates, fourwing saltbush, dropseed, and Apacheplume decrease and there is an increase in plants such as creosotebush, fluffgrass, broom snakeweed, mesquite, and arrowweed pluchea.

This unit is suited to such management practices as fencing and livestock watering facilities. It has limited suitability for most rangeland management practices because of the inability of the soils to produce a significant amount of vegetation under natural conditions.

625—Berino sandy loam, 1 to 3 percent slopes. This deep, well drained soil is on bajadas. It formed in alluvium. Areas are irregular in shape and are 200 to 2,000 acres in size. The present vegetation is grass. Elevation is 5,100 to 5,300 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is brown sandy loam about 9 inches thick. The upper 3 inches of the subsoil is strong brown sandy clay loam, and the lower 17 inches is light brown sandy clay loam. The substratum to a depth of 60 inches or more is brown loam.

Included in this unit are small areas of a soil that is similar to the Turney soil but does not have a horizon of calcium carbonate accumulation and is on alluvial fans and small areas of Turney soils on ridges. Included areas make up about 25 percent of the total acreage.

Permeability of this soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, galleta, bush muhly, blue grama, and bottlebrush squirreltail. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are Indian ricegrass and fourwing saltbush. The average annual production of air-dry vegetation ranges from 800 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, bush muhly, bottlebrush squirreltail, and Indian ricegrass decrease and there is an increase in plants such as mesa dropseed, galleta, burrograss, threeawn, broom snakeweed, and walkingstick cholla.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grubbing, stacking, and burning cholla are acceptable brush control practices on the Berino soil when accompanied by deferment from grazing. Grazing management should be designed to increase the productivity and reproduction of black grama, bush muhly, and Indian ricegrass.

627—Berino-Dona Ana association, 1 to 5 percent slopes. This map unit is on bajadas, fan terraces, and plains. Areas are irregular in shape and are 400 to 3,000 acres in size. The present vegetation is grasses. Elevation is 4,800 to 5,500 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 40 percent Berino fine sand, 1 to 5 percent slopes, and 35 percent Dona Ana sandy loam, 1 to 5 percent slopes. The Berino soil is on bajadas, plains, and the lower positions of fan terraces, and the Dona Ana soil is on the tops and other higher lying areas of fan terraces.

Included in this unit are small areas of Turney and Pajarito soils throughout the unit and a soil that is similar to the Dona Ana soil but is finer in texture and is along the Sierra County line. Included areas make up about 25 percent of the total acreage.

The Berino soil is deep and well drained. It formed in alluvial and eolian material. Typically, the surface layer is reddish brown fine sand about 4 inches thick. The upper 6 inches of the subsoil is reddish brown sandy loam, and the lower 21 inches is reddish brown sandy clay loam. The substratum to a depth of 60 inches or more is pink sandy loam.

Permeability of the Berino soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is very high.

The Dona Ana soil is deep and well drained. It formed in alluvial and eolian material. Typically, the surface layer is brown sandy loam about 3 inches thick. The upper 3 inches of the subsoil is brown heavy sandy loam, and the lower 8 inches is light brown sandy clay loam. The upper 31 inches of the substratum is pink and pinkish white sandy clay loam and loam, and the lower part to a depth of 60 inches or more is pinkish gray sandy loam.

Permeability of the Dona Ana soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, galleta, bush muhly, and sand dropseed. Other important plants present in smaller amounts than those characterizing the potential natural plant community are Indian ricegrass and blue grama. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, Indian ricegrass, and bush muhly decrease and there is an increase in plants such as galleta, dropseed, threeawn, yucca, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of black grama, bush muhly, and Indian ricegrass.

634—Lozier-Rock outcrop complex, 10 to 35 percent slopes. This map unit is on cuestas, hogbacks, hills, and low mountains. Areas are irregular in shape and are 100 to 3,000 acres in size. The present vegetation is grass and shrubs. Elevation is 4,800 to 6,000 feet. The average annual precipitation is 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 45 percent Lozier very flaggy loam and 25 percent Rock outcrop. The Lozier soil is in irregularly shaped pockets on dip slopes of cuestas and hogbacks and also on structural benches and foot slopes of hills and mountains. Rock outcrop is present as exposed bedding planes on dip slopes and also as ledges and cliffs on scarp faces of cuestas and hogbacks and back slopes of hills and mountains in areas where slope is as much as 50 percent.

Included in this unit are small areas of Lozier soils that have various amounts of gravel and stones in the surface layer and have slopes of as much as 55 percent; soils that are similar to the Lozier soil but are moderately deep to soft shale and are on cuestas, on hogback scarp faces, and on toe slopes and foot slopes of hills and mountains; soils that are similar to Turney soils but are gravelly throughout and are deep or moderately deep to limestone or shale and are in small valleys; Arizo soils and Riverwash in arroyo channel areas; soils that are shallow to gypsum bedrock; and soils that are similar to the Lozier soil but exhibit less development and are on small canyon escarpments. Included areas make up about 30 percent of the total acreage.

The Lozier soil is very shallow and shallow and is well drained. It formed in alluvium derived dominantly from limestone. Typically, the surface layer is yellowish brown very flaggy loam about 3 inches thick. The underlying material is pale brown and white very flaggy loam about 13 inches thick. Limestone is at a depth of 16 inches.

Permeability of the Lozier soil is moderate. Available water capacity is very low. Effecting rooting depth is 6 to 16 inches. Runoff is rapid, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

Rock outcrop consists of exposed areas of limestone. It supports little if any vegetation, and surface runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community is characterized by black grama, bush muhly, sideoats grama, New Mexico feathergrass, and galleta. The average annual production of air-dry vegetation ranges from 800 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, bush muhly, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as creosotebush, threeawn, hairy grama, and slim tridens.

This unit is suited to such management practices as proper grazing use, planned grazing systems, and livestock watering facilities. Fencing and installilng pipelines for providing water for livestock are difficult because of the very shallow and shallow depth to limestone. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and New Mexico feathergrass.

635—Wink-Pajarito complex, 1 to 8 percent slopes. This map unit is on hummocky, sand-mantled plains, bajadas, and fan terraces (fig. 2). Areas are irregular in shape and are 200 to 10,000 acres in size. The present vegetation is grass and shrubs. Elevation is 4,400 to 5,600 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 40 percent Wink fine sand, 1 to 8 percent slopes, and 35 percent Pajarito loamy fine sand, 1 to 5 percent slopes. The Pajarito soil is on the higher parts of plains, bajadas, and fan terraces. The Wink soil is on the lower parts of these landforms.

Included in this unit are small areas of a soil that is similar to the Wink soil but has an indurated caliche layer at a moderate depth and is northeast of San Antonio, soils that are similar to the Wink soil but have a gravelly substratum and are north of the Jornada del Muerto lava flow and in areas northwest of Bingham, and Bluepoint soils in hummocky areas on the Sevilleta Land Grant. Included areas make up about 25 percent of the total acreage.

The Wink soil is deep and well drained. It formed in eolian and alluvial material. Typically, the surface layer is

Figure 2.—Typical area of Wink-Pajarito complex, 1 to 8 percent slopes.

light brown fine sand about 2 inches thick. The subsoil is light brown sandy loam about 9 inches thick. The upper 26 inches of the substratum is light brown and pink sandy loam, and the lower part to a depth of 60 inches or more is pinkish white sandy loam.

Permeability of the Wink soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high.

The Pajarito soil is deep and well drained. It formed in eolian and alluvial material. Typically, the surface layer is light brown loamy fine sand about 2 inches thick. The subsoil is brown sandy loam about 6 inches thick. The substratum to a depth of 60 inches or more is light brown and white sandy loam.

Permeability of the Pajarito soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, bush muhly, sand dropseed, spike dropseed, and Indian ricegrass. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, bush muhly, and Indian ricegrass decrease and there is an increase in plants such as sand dropseed, spike dropseed, and sand sagebrush.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama, bush muhly, and Indian ricegrass.

636—Campana-Yesum association, 1 to 6 percent slopes. This map unit is on fan terraces and bajadas. Areas are irregular in shape and are 200 to 2,000 acres in size. The present vegetation is grass and shrubs. Elevation is 4,700 to 5,700 feet. The average annual precipitation is 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 50 percent Campana loamy fine sand and 20 percent Yesum loamy very fine sand. The Campana soil is on fan terraces and in swales, and the Yesum soil is on upper fan terraces and bajadas, on low knolls, and in dissected areas adjacent to arroyos.

Included in this unit are small areas of soils that are similar to the Campana soil but are gravelly throughout or are coarser textured, soils that are similar to these Campana and Turney soils but have soft, interbedded shale and sandstone at a depth of 20 to 60 inches, and soils that are similar to this Campana soil but has a loam surface layer. These included areas are throughout the unit. Also included are soils that are similar in texture to the Turney soil but that do not have a layer of calcium carbonate accumulation and are in swales, and Bluepoint soils on about 900 acres of mesquite covered coppice sand dunes about 2 miles northwest of Cerro Pardo. Included areas make up about 30 percent of the total acreage.

The Campana soil is deep and well drained. It formed in alluvium derived dominantly from limestone, gypsum, and sandstone mantled by eolian material. Typically, the surface layer is brown loamy fine sand about 3 inches thick. The upper 25 inches of the subsoil is brown and light brown sandy clay loam and loam, and the lower 4 inches is light reddish brown loam. The upper 16 inches of the substratum is pink loam and light reddish brown sandy loam, and the lower part to a depth of 60 inches or more is reddish brown fine sandy loam.

Permeability of the Campana soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is very high.

The Yesum soil is deep and well drained. It formed in alluvium derived dominantly from gypsum, limestone, and sandstone and mantled with eolian material. Typically, the surface layer is light brown loamy very fine sand about 1 inch thick. The upper 24 inches of the underlying material is white and pinkish white loam, the next 26 inches is pinkish gray and pink very fine sandy loam, and the lower part to a depth of 60 inches or more is pink fine sandy loam.

Permeability of the Yesum soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is very high. The horizons of gypsum accumulation in some areas are weakly cemented into thin, discontinuous plates.

This unit may be used for livestock grazing and wildlife habitat.

The potential natural plant community on the Campana soil is characterized mainly by alkali sacaton, galleta, and vine-mesquite. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are black grama, blue grama, and Mormon-tea. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 500 pounds in unfavorable years. If the plant community deteriorates, alkali sacaton, vine-mesquite, and black grama decrease and there is an increase in plants such as galleta, burrograss, ring muhly, and broom snakeweed.

The Yesum soil supports a plant community consisting of coldenia, gyp dropseed, Bigelow sagebrush, Mormon-tea, and yucca. The average annual production of air-dry vegetation ranges from 150 pounds per acre in favorable years to 50 pounds in unfavorable years.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of alkali sacaton, vine-mesquite, and black grama.

638—Nickel Variant very gravelly sandy loam, 2 to 15 percent slopes. This deep, well drained soil is on bajadas and fan terraces. It formed in alluvium derived dominantly from limestone and sandstone. Areas are irregular in shape and are 100 to 1,800 acres in size. The present vegetation is grass, shrubs, and scattered juniper. Elevation is 5,400 to 5,700 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is light brown very gravelly sandy loam about 2 inches thick. The subsoil is light brown very gravelly loam about 4 inches thick. The upper 24 inches of the substratum is pinkish white very gravelly coarse sandy loam, and the lower part to a depth of 60 inches or more is pink and light brown extremely gravelly coarse sand.

Included in this unit are small areas of very gravelly soils that are shallow or moderately deep to indurated caliche, soils that are similar in texture to this Turney Variant soil but have a higher content of calcium carbonate, areas of igneous Rock outcrop along Canon Agua Buena, loamy soils that are shallow to soft shale or sandstone and are along Canada Quemado, soils that are similar to the Nickel Variant soil but have secondary gypsum between depths of 20 and 40 inches, and Nickel Variant soils that have slopes of more than 15 percent. Included areas make up about 35 percent of the total acreage.

Permeability of the Nickel Variant soil is moderately rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, New Mexico feathergrass, bush muhly, galleta, and sideoats grama. The average annual production of air-dry vegetation ranges from 600 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, bush muhly, and sideoats grama decrease and there is an increase in plants such as fluffgrass, threeawn, galleta, and broom snakeweed. This unit is susceptible to invasion by both oneseed juniper and creosotebush.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and New Mexico feathergrass.

641—Turney loam, 1 to 5 percent slopes. This deep, well drained soil is on bajadas and plains. It formed in alluvium. Areas are irregular in shape and are 400 to 5,000 acres in size. The present vegetation is grass. Elevation is 4,400 to 5,600 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is pale brown loam about 4 inches thick. The upper 7 inches of the subsoil is reddish brown and brown loam and sandy clay loam, and the lower 9 inches is brown clay loam. The upper 6 inches of the substratum is light brown clay loam, and the lower part to a depth of 60 inches or more is pink and pinkish white loam.

Included in this unit are small areas of Dona Ana and Berino soils in slightly depressional areas, Nickel soils on breaks, and Adelino soils on the higher positions. Included areas make up about 20 percent of the total acreage.

Permeability of this soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential native plant community on the Turney soil is characterized mainly by black grama, bush muhly, galleta, blue grama, and fourwing saltbush. The average annual production of air-dry vegetation ranges from 800 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, bush muhly, and alkali sacaton decrease and there is an increase in plants such as galleta, dropseed, threeawn, and walkingstick cholla. Mesquite has invaded some areas of this unit.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. It has limited suitability for rangeland management practices such as mechanical brush control because of the hazard of soil blowing. Chemical brush control is an acceptable practice on the Turney soil when accompanied by deferment from grazing. Grazing management should be designed to increase the productivity and reproduction of black grama and bush muhly in areas in the higher, cooler parts of the survey area and of black grama, alkali sacaton, and bush muhly in the lower, warmer areas.

645—Yesum, overblown-Yesum complex, 0 to 3 percent slopes. This map unit is on hummocky, sand mantled bajadas and basin floor surfaces in the Jornada del Muerto. Areas are irregular in shape and are 200 to 4,000 acres in size. The present vegetation is grass and shrubs. Elevation is 4,650 to 5,200 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degreees F, and the average frost-free period is 180 to 210 days.

This unit is 45 percent Yesum fine sand and 25 percent Yesum loamy very fine sand. Both components occur randomly throughout this map unit.

Included in this unit are small areas of soils that are similar to the Campana soils but are coarser textured and have a fine sand surface layer, Bluepoint soils that have buried gypsiferous soils between depths of 20 and 60 inches and are on small dunes, and soils that are similar to athe Adelino, Barana, and Berino soils but have a buried gypsiferous soil between depths of 40 and 60 inches and are in swales and depressional areas. Included areas make up about 30 percent of the total acreage.

The Yesum fine sand is deep and well drained. It formed in alluvium derived dominantly from gypsum, limestone, and sandstone and includes eolian material in the surface layer. Typically, the surface layer is brown fine sand about 8 inches thick. The upper 4 inches of the underlying material is white loam, the next 25 inches is pinkish white and pink fine sandy loam and very fine sandy loam, and the lower part to a depth of 60 inches or more is pinkish white and pink very fine sandy loam.

Permeability of the Yesum fine sand is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high. The gypsiferous horizons of this soil in some places are weakly cemented into thin, discontinuous plates.

The Yesum loamy very fine sand is deep and well drained. It formed in alluvium derived dominantly from gypsum, limestone, and sandstone and includes eolian material in the surface layer. Typically, the surface layer is light brown loamy very fine sand about 1 inch thick. The upper 11 inches of the underlying material is white loamy very fine sand and pinkish white fine sandy loam, the next 39 inches is pink very fine sandy loam and loamy very fine sand, and the lower part to a depth of 60 inches or more is white loamy very fine sand.

Permeability of the Yesum loamy very fine sand is moderate. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is very high. The gypsic horizons of this soil in some places are weakly cemented into thin, discontinuous plates.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Yesum fine sand is characterized by black grama, Indian ricegrass, dropseeds, and bush muhly. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are galleta, sand sagebrush, and Mormon-tea. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, Indian ricegrass, and bush muhly decrease and there is an increase in plants such as dropseeds, threeawn, sand sagebrush, and Mormon-tea.

The Yesum loamy very fine sand supports a plant community consisting of coldenia, gyp dropseed, Bigelow sagebrush, Mormon-tea, and yucca. The average annual production of air-dry vegetation ranges from 150 pounds per acre in favorable years to 50 pounds in unfavorable years.

This unit is suited to such management practices as planned grazing systems, proper grazing use, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of black grama and Indian ricegrass.

646—Yesum very fine sandy loam, 0 to 6 percent slopes. This deep, well drained soil is on bajadas, fan terraces, and the basin floor at the northern end of the Jornada del Muerto. It formed in alluvium derived dominantly from gypsum, limestone, and sandstone and includes eolian material in the surface layer. Areas are irregular in shape and are 300 to 3,500 acres in size. The present vegetation is grass and shrubs. Elevation is 5,000 to 5,600 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 64 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is pale brown very fine sandy loam about 1 inch thick. The upper 20 inches of the underlying material is white and pinkish white loam, the next 18 inches is pinkish white fine sandy loam, and the lower part to a depth of 60 inches or more is white very fine sandy loam and pink loamy very fine sand.

Included in this unit are small areas of soils that are similar to Barana soils but have a buried gypsiferous soil between depths of 35 and 60 inches and are in swales and sinkholes on the basin floor, Campana soils in swales on bajadas near Coyote Spring, Yesum fine sand on the basin floor; and Yesum soils near springs that are moist and strongly saline and alkali. Included areas make up about 30 percent of the total acreage.

Permeability of this soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high. The gypsiferous horizons of this soil in some places are weakly cemented into thin, discontinuous plates.

This unit is used for livestock grazing and wildlife habitat.

This unit supports a plant community consisting of coldenia, gyp dropseed, Bigelow sagebrush, Mormon-tea, and yucca. The average annual production of air-dry vegetation ranges from 150 pounds per acre in favorable years to 50 pounds in unfavorable years. Because of the sparseness and low forage value of the existing vegetation, this unit is not well suited° to livestock grazing.

648—Armijo-Glendale-Bluepoint association, 0 to 3 percent slopes. This map unit is on flood plains and on toe slopes of alluvial fans and fan terraces adjacent to the Rio Puerco. Areas are long and narrow and are 2,000 to 6,000 acres in size. The present vegetation is shrubs and grasses. Elevation is 4,700 to 5,100 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 45 percent Armijo silty clay loam, 0 to 1 percent slopes, 25 percent Glendale clay loam, 0 to 1 percent slopes, and 20 percent Bluepoint loamy sand, 1 to 3 percent slopes. The Armijo and Glendale soils are on the terraces and flood plains, and the Bluepoint soil is on the toes of alluvial fans adjacent to the flood plains and terraces.

Included in this unit are small areas of gullied land and slickspots on flood plains, Riverwash on the bottom of arroyos, and Pajarito and Anthony soils on flood plains adjacent to the river channel. Included areas make up about 10 percent of the total acreage.

The Armijo soil is deep and moderately well drained. It formed in recent alluvium. Typically, the surface layer is light brown silty clay loam about 3 inches thick. The underlying material to a depth of 60 inches or more is brown and yellowish brown silty clay.

Permeability of the Armijo soil is very slow. Available water capacity is low. Effective rooting depth is to 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is strongly saline and is subject to rare periods of flooding during thunderstorms in summer.

The Glendale soil is deep and well drained. It formed in recent alluvium. Typically, the surface layer is brown clay loam about 12 inches thick. The underlying material to a depth of 60 inches or more is brown and light brown silty clay loam and clay loam.

Permeability of the Glendale soil is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is strongly saline and is subject to rare periods of flooding during thunderstorms in summer.

The Bluepoint soil is deep and excessively drained. It formed in alluvium and eolian material. Typically, the surface layer is brown loamy sand about 8 inches thick. The underlying material to a depth of 60 inches or more is pale brown loamy sand and gravelly coarse sand.

Permeability of the Bluepoint soil is rapid. Available water capacity is very low or low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high. This soil is slightly saline and is subject to rare periods of flooding during thunderstorms in summer.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Armijo and Glendale soils is characterized mainly by alkali sacaton. Giant sacaton, tobosa, vine-mesquite, and fourwing saltbush are also present in smaller amounts in the potential native plant community. The average annual production of air-dry vegetation ranges from 3,000 pounds per acre in favorable years to 1,500 pounds in unfavorable years. If the plant community deteriorates, alkali sacaton, giant sacaton, and vine-mesquite decrease and there is an increase in plants such as tobosa, inland saltgrass, and saltcedar. Severe deterioration of the potential natural plant community may result in nearly total domination by saltcedar.

The potential natural plant community on the Bluepoint soil is characterized mainly by Indian ricegrass, giant dropseed, sand dropseed, spike dropseed, and black grama. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, Indian ricegrass and black grama decrease and there is an increase in plants such as dropseeds, sand sagebrush, and broom dalea. Mesquite may invade.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grade stabilization and erosion control structures are difficult to install on the Armijo and Glendale soils because of difficulty in locating safe spillway sites and the erodibility of the soils. This unit has limited suitability for rangeland management practices such as mechanical brush control because of the high hazard of soil blowing. Grazing management should be designed to increase the productivity and reproduction of alkali sacaton on the Armijo and Glendale soils and Indian ricegrass on the Bluepoint soil.

649—Nickel-Caliza very gravelly sandy loams, 1 to 30 percent slopes. This map unit is on bajadas and fan terraces. Areas are irregular in shape and are 100 to 10,000 acres in size. The present vegetation is shrubs and grasses. Elevation is 4,500 to 5,500 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 55 percent Nickel very gravelly sandy loam, 1 to 25 percent slopes, and 25 percent Caliza very gravelly sandy loam, 1 to 30 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of a shallow soil that has an indurated caliche horizon and is on terraces, Arizo soils and Riverwash in swales and arroyos, badland, and Caliza soils in the more strongly sloping areas throughout the unit. Included areas make up about 20 percent of the total acreage.

The Nickel soil is deep and well drained. It formed in gravelly alluvium derived dominantly from rhyolitic tuff and lava. Typically, the surface layer is pinkish gray very gravelly sandy loam about 8 inches thick. The upper 46 inches of the underlying material is pinkish white and pink extremely gravelly sandy loam and very gravelly sandy loam, and the lower part to a depth of 60 inches or more is pink extremely gravelly loam.

Permeability of the Nickel soil is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Caliza soil is deep and well drained. It formed in alluvium derived dominantly from rhyolitic tuff and lava. Typically, the surface layer is brown very gravelly sandy loam about 3 inches thick. The upper 14 inches of the underlying material is pale brown very gravelly coarse sandy loam, and the lower part to a depth of 60 inches or more is pale brown extremely gravelly loamy coarse sand.

Permeability of the Caliza soil is moderately rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Nickel soil is characterized mainly by black grama, bush muhly, cane bluestem, and creosotebush. The average annual production of air-dry vegetation ranges from 450 pounds per acre in favorable years to 150 pounds in unfavorable years. If the plant community deteriorates, black grama, bush muhly, and cane bluestem decrease and there is an increase in plants such as slim tridens, sand dropseed, fluffgrass, creosotebush, and broom snakeweed.

The potential natural plant community on the Caliza soil is characterized mainly by sand dropseed, mesa dropseed, black grama, bush muhly, and creosotebush. The average annual production of air-dry vegetation ranges from 400 pounds per acre in favorable years to 125 pounds in unfavorable years. If the plant community deteriorates, black grama and bush muhly decrease and there is an increase in plants such as sand dropseed, fluffgrass, threeawn, creosotebush, and broom snakeweed.

Severe deterioration of the potential natural plant community on this unit may result in nearly total domination by creosotebush.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama and bush muhly.

650—Typic Camborthids-Nolam association, 2 to 50 percent slopes. This map unit is on bajadas and fan terraces. Areas are irregular in shape and are 500 to 3,000 acres in size. The present vegetation is shrubs and grasses. Elevation is 4,600 to 5,200 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 50 percent Typic Camborthids, 15 to 50 percent slopes, and 25 percent Nolam very channery sandy loam, 2 to 15 percent slopes. The Typic Camborthids are on the lower positions, and the Nolam soil is on the higher positions.

Included in this unit are small areas of sandstone and conglomerate Rock outcrop in the form of vertical escarpments on back slopes, soils that are similar to Nickel and Caliza soils but are redder, and Arizo soils and Riverwash in arroyo channel areas. Included areas make up about 25 percent of the total acreage.

The Typic Camborthids are shallow to deep and are well drained. They formed in alluvium and colluvium derived from sandstone, conglomerate, and mudstone. No single profile is typical of these soils, but one commonly observed in this survey area has a surface layer of yellowish red extremely channery sandy loam about 5 inches thick. The upper 8 inches of the subsoil is yellowish red very gravelly sandy loam, and the lower 12 inches is yellowish red very gravelly sandy clay loam. Soft sandstone is at a depth of 25 inches. Depth to bedrock ranges from 15 to 60 inches or more.

Permeability of the Typic Camborthids is moderately rapid to moderately slow. Available water capacity is very low to high. Effective rooting depth is 15 to 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

The Nolam soil is deep and well drained. It formed in alluvium derived dominantly from sandstone, siltstone, and limestone. Typically, the surface layer is light reddish brown very channery sandy loam about 2 inches thick. The subsoil is reddish brown very gravelly sandy clay loam about 24 inches thick. The upper 20 inches of the substratum is light reddish brown extremely gravelly loamy sand, and the lower part to a depth of 60 inches or more is reddish brown extremely gravelly loamy coarse sand.

Permeability of the Nolam soil is moderate. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight because of the presence of a desert pavement.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on Typic Camborthids is characterized mainly by mesa dropseed, sand dropseed, black grama, bush muhly, and creosotebush. The average annual production of air-dry vegetation ranges from 475 pounds per acre in favorable years to 100 pounds in unfavorable years. If the plant community deteriorates, black grama and bush muhly decrease and there is an increase in plants such as fluffgrass, broom snakeweed, and creosotebush.

The potential natural plant community on the Nolam soil is characterized mainly by black grama, bush muhly, sideoats grama, and galleta. The average annual production of air-dry vegetation ranges from 750 pounds per acre in favorable years to 225 pounds in unfavorable years. If the plant community deteriorates, black grama, bush muhly, and sideoats grama decrease and there is an increase in plants such as threeawn, fluffgrass, dropseed, and creosotebush.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and developing livestock watering facilities. It has limited suitability for rangeland management practices such as installing pipelines for providing water for livestock because of the steepness of slope. Grazing management should be designed to increase the productivity and reproduction of black grama, bush muhly, and sideoats grama.

651—Barana loam, 0 to 2 percent slopes. This deep, well drained soil is on plains and in swales. It formed in mixed alluvium. Areas are irregular in shape and are 250 to 3,000 acres in size. The present vegetation is grass. Elevation is 4,800 to 5,300 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is reddish brown loam about 3 inches thick. The upper 14 inches of the subsoil is reddish brown clay loam and silty clay loam, and the lower 6 inches is light brown silty clay loam. The upper

18 inches of the buried subsoil is reddish brown loam, and the lower part to a depth of 60 inches or more is reddish brown and light reddish brown clay loam.

Included in this unit are small areas of Berino and Dona Ana soils in the slightly higher lying areas of the unit, soils that are similar to this Barana soil but have strata of fine sand to silty clay, Pajarito soils near Canada Quemada, and recent alluvial soils that are similar in texture to this Barana soil but have gypsum below the surface layer and are on the Sevilleta National Wildlife Refuge. Included areas make up about 30 percent of the total acreage.

Permeability of this soil is moderately slow. Available water capacity is high to very high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. Soil blowing leaves this soil exposed as numerous round spots that are almost barren of vegetation.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by alkali sacaton, galleta, vine-mesquite, and fourwing saltbush. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 650 pounds in unfavorable years. If the plant community deteriorates, alkali sacaton and vine-mesquite decrease and there is an increase in plants such as galleta, burrograss, and mat muhly. In areas that are severely deteriorated, this unit is highly susceptible to gullying. Large barren areas are present, and production in these areas is drastically lower.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, fencing, and providing grade stabilization and erosion control structures. Grazing management should be designed to increase the productivity and reproduction of alkali sacaton and vine-mesquite.

653—Bucklebar sandy clay loam, 1 to 3 percent slopes. This deep, well drained soil is on bajadas and in broad swales. It formed in alluvium derived dominantly from sandstone, siltstone, and shale. Areas are irregular in shape and are 150 to 2,000 acres in size. The present vegetation is grass. Elevation is 4,900 to 5,500 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is reddish brown sandy clay loam about 4 inches thick. The upper 20 inches of the subsoil is reddish brown clay loam, and the lower 9 inches is reddish brown loam. Below this to a depth of 60 inches of more is a buried subsoil of reddish brown silty clay loam.

Included in this unit are small areas of soils that are similar to this Bucklebar soil but have more clay in the subsoil and are in the lowest parts of swales; weakly developed soils that have less clay than this Bucklebar soil, are gravelly, and are on bajada ridges; Barana and Oscura soils near areas of their respective map units; Berino and Dona Ana soils on sand-mantled bajada ridges; and gullied land adjacent to drainageways. Included areas make up about 35 percent of the total acreage.

Permeability of this Bucklebar soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by alkali sacaton, vine-mesquite, galleta, fourwing saltbush, and blue grama. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 650 pounds in unfavorable years. Parts of this unit are susceptible to flooding during prolonged, high intensity storms. The potential natural plant community in these areas is characterized by giant sacaton, alkali sacaton, galleta, and vine-mesquite. If the plant community deteriorates, alkali sacaton, giant sacaton, and vine-mesquite decrease and there is an increase in plants such as galleta, burrograss, and mat muhly. In areas that are severely deteriorated, this soil is highly susceptible to gullying. Large barren areas are present, and production in these areas is drastically lower.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, fencing, erosion control practices, and providing grade stabilization structures. Grazing management should be designed to increase the productivity and reproduction of giant sacaton, alkali sacaton, and vine-mesquite.

655—Nolam gravelly sandy loam, 1 to 7 percent slopes. This deep, well drained soil is on broad fan terraces and bajadas. It formed in gravelly alluvium derived from rhyolitic tuff and lava. Areas are irregular in shape and are 150 to 20,000 acres in size. The present vegetation is grass. Elevation is 4,500 to 5,600 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is light brown gravelly sandy loam about 2 inches thick. The upper 11 inches of the subsoil is reddish brown very gravelly sandy clay loam, and the lower 12 inches is light reddish brown very gravelly sandy loam. The substratum to a depth of 60 inches or more is pink very gravelly sandy loam.

Included in this unit are small areas of Nickel soils on ridges, Arizo soils in drainageways and in slightly depressional areas, and a soil that is similar to this

Nolam soil but has less calcium carbonate that is lower in the profile. Included areas make up about 20 percent of the total acreage.

Permeability of this Nolam soil is moderate. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, bush muhly, sideoats grama, cane bluestem, and galleta. The average annual production of air-dry vegetation ranges from 675 pounds per acre in favorable years to 275 pounds in unfavorable years. If the plant community deteriorates, black grama, bush muhly, sideoats grama, and cane bluestem decrease and there is an increase in plants such as galleta, threeawn, sand dropseed, and creosotebush. Mesquite may invade.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama, bush muhly, and sideoats grama.

656—Aftaden-Akela-Lava flows association, 1 to 15 percent slopes. This map unit is on mesas and plains of the Jornada del Muerto. Areas are irregular in shape and are 200 to 9,500 acres in size. The present vegetation is grass. Elevation is 4,400 to 5,000 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 35 percent Aftaden loamy fine sand, 1 to 9 percent slopes; 25 percent Akela gravelly loamy fine sand, 1 to 8 percent slopes; and 20 percent Lava flows, 1 to 15 percent slopes. The Aftaden soil is on the southwest side of ridges, the Akela soil is on the northeast side of ridges, and Lava flows consist of ridges and escarpments throughout the unit.

Included in this unit are small areas of a soil that has a loamy fine sand subsoil and is in the area near the Sierra County line, a Dona Ana soil in depressional areas between ridges, a Bluepoint soil on the southwest side of the Lava flows, and soils that have slopes of more than 15 percent and are on ridges. Included areas make up about 20 percent of the total acreage.

The Aftaden soil is shallow and well drained. It formed in eolian material. Typically, the surface layer is brown loamy fine sand about 2 inches thick. The upper 3 inches of the subsoil is brown fine sandy loam, and the lower 6 inches is strong brown gravelly sandy loam. Basalt is at a depth of 11 inches.

Permeability of the Aftaden soil is moderately rapid. Available water capacity is very low. Effective rooting depth is 10 to 15 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is very high.

The Akela soil is very shallow and shallow and is well drained. It formed in eolian sediment and local alluvium. Typically, the surface layer is light brown gravelly loamy fine sand about 2 inches thick. The underlying material is light brown and pink very gravelly fine sandy loam about 10 inches thick. Basalt is at a depth of 12 inches.

Permeability of the Akela soil is moderate. Available water capacity is very low. Effective rooting depth is 4 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

Lava flows consist of ridges and small escarpments. There is little if any vegetation in these areas. Surface runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Aftaden soil is characterized mainly by black grama, bush muhly, mesa dropseed, sand dropseed, and tobosa. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are plains bristlegrass and winterfat. The average annual production of air-dry vegetation ranges from 700 pounds per acre in favorable years to 325 pounds in unfavorable years. If the plant community deteriorates, black grama, bush muhly, and plains bristlegrass decrease and there is an increase in plants such as sand dropseed, mesa dropseed, threeawn, and soaptree yucca.

The potential natural plant community on the Akela soil is characterized mainly by black grama, sideoats grama, bush muhly, tobosa, and fourwing saltbush. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are cane bluestem and winterfat. The average annual production of air-dry vegetation ranges from 750 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and bush muhly decrease and there is an increase in plants such as tobosa, fluffgrass, threeawn, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, and proper placement of salt for livestock. Installing pipelines for providing water for livestock and fencing are difficult because of the very shallow and shallow depth to basalt. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and bush muhly.

657—Akela-Lava flows-Armendaris association, 0 to 30 percent slopes. This map unit is on plains in the Jornada del Muerto. Areas are irregular in shape and are 100 to 45,000 acres in size. The present vegetation is grasses and shrubs. Elevation is 4,600 to 5,000 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 40 percent Akela very gravelly loam, 0 to 15 percent slopes; 30 percent Lava flows, 15 to 30 percent slopes; and 20 percent Armendaris silt loam, 0 to 1 percent slopes. The Akela soil is on foot slopes below the Lava flows; Lava flows are on the crater, pressure ridges, and flow lobes; and the Armendaris soil is in swales and circular depressional areas surrounded by Lava flows.

Included in this unit are small areas of soils that are similar to the Armendaris soil but are moderately deep or shallow and are in swales and depressional areas, soils that are similar to the Akela soil but are moderately deep and are in areas near the Akela soil, and soils that are similar to the Armendaris soil but are higher in silt content and are in swales and depressional areas. Included areas make up about 10 percent of the total acreage.

The Akela soil is very shallow and shallow and is well drained. It formed in alluvium and eolian material. Typically, the surface layer is brown very gravelly loam about 3 inches thick. The upper 3 inches of the underlying material is light brown very gravelly loam, and the lower part to a depth of 12 inches is light brown extremely cobbly loam. Calcium carbonate coated basalt is at a depth of 12 inches.

Permeability of the Akela soil is moderate. Available water capacity is very low. Effective rooting depth is 4 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

Lava flows are basalt in the form of ridges, flow lobes, and the central crater rim. There is little if any vegetation in these areas. Surface runoff is rapid.

The Armendaris soil is deep and well drained. It formed in local alluvium derived dominantly from loess. Typically, the surface layer is light yellowish brown silt loam about 2 inches thick. The upper 3 inches of the subsoil is light brown silty clay loam, and the lower 30 inches is dark brown and brown silty clay. The substratum to a depth of 60 inches or more is light brown and brown silty clay loam.

Permeability of the Armendaris soil is slow. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is none. The hazard of soil blowing is moderate. This soil is subject to rare periods of flooding during thunderstorms in summer.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Akela soil is characterized mainly by black grama, sideoats grama, bush muhly, tobosa, and fourwing saltbush. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are cane bluestem and Arizona cottontop. The average annual production of air-dry vegetation ranges from 750 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and bush muhly decrease and there is an increase in plants such as tobosa, fluffgrass, threeawn, and broom snakeweed.

The potential natural plant community on the Armendaris soil is characterized mainly by tobosa, vine-mesquite, sideoats grama, and cane bluestem. The average annual production of air-dry vegetation ranges from 2,000 pounds per acre in favorable years to 600 pounds in unfavorable years. If the plant community deteriorates, vine-mesquite, sideoats grama, and cane bluestem decrease and there is an increase in plants such as tobosa, which will completely dominate the plant community.

This unit is suited to such management practices as proper grazing use, planned grazing systems, and proper placement of salt for livestock. It has limited suitability for range management practices such as installing pipelines and fencing because of the amount of Lava flows and the very shallow and shallow depth to basalt in the Akela soil. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and bush muhly on the Akela soil and vine-mesquite, sideoats grama, and cane bluestem on the Armendaris soil.

660—Dune land. This map unit consists of ridges and intervening troughs of sand that shifts with the wind. Areas are irregular in shape and are 100 to 500 acres in size. Elevation is 4,400 to 5,000 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 59 to 64 degrees F, and the average frost-free period is 180 to 210 days.

Included in this unit are small areas of Bluepoint, Brazito, Wink, and Pajarito soils in stable areas throughout the unit. Included areas make up about 15 percent of the total acreage.

Because the soils in this unit are unstable, the potential natural plant community is usually scarce and variable. Plants common to the unit include broom dalea, giant dropseed, Indian ricegrass, and sand sagebrush. The unit generally is not well suited to use as rangeland because of low productivity.

689—Laborcita-Pilabo-Lemitar complex, 5 to 45 percent slopes. This map unit is on hogbacks, cuestas, and hills. Areas are irregular in shape and are 100 to 6,550 acres in size. The present vegetation is grass and shrubs. Elevation is 5,000 to 6,250 feet. The average annual precipitation is 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 35 percent Laborcita very stony sandy loam, 15 to 45 percent slopes, 30 percent Pilabo very stony loam, 15 to 35 percent slopes, and 20 percent

Lemitar very cobbly sandy loam, 5 to 20 percent loam. The Laborcita soil is on scarp faces of hogbacks and cuestas, the Pilabo soil is on dip slopes of hogbacks and cuestas, and the Lemitar soil is on summits and shoulders of hills, cuestas, and hogbacks.

Included in this unit are small areas of Rock outcrop in the form of ledges on the summits of hills and hogbacks, a soil that is similar to the Laborcita soil but is moderately deep and is on hogback scarp faces, a soil that is similar to the Pilabo soil but has a finer textured subsoil and is on talus slopes, Arizo soils in drainageways, and areas that are at an elevation of as much as 7,250 feet. Included areas make up about 15 percent of the total acreage.

The Laborcita soil is deep and well drained. It formed in colluvium and alluvium derived dominantly from tuff. Typically, the surface layer is brown very stony sandy loam about 2 inches thick, the next layer is brown very gravelly sandy loam about 5 inches thick. The subsoil is brown gravelly loam about 9 inches thick. The upper 12 inches of the substratum is light brown gravelly loam, and the lower part to a depth of 60 inches or more is pink and light brown gravelly loam.

Permeability of the Laborcita soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

The Pilabo soil is deep and well drained. It formed in colluvium and alluvium derived dominantly from tuff or granite. Typically, the surface layer is dark brown very stony loam about 3 inches thick. The subsoil is dark brown and brown very cobbly loam about 14 inches thick. The upper 18 inches of the substratum is pale brown very cobbly loam, and the lower part to a depth of 60 inches or more is light yellowish brown very gravelly loam.

Permeability of the Pilabo soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Lemitar soil is very shallow and shallow and is well drained. It formed in alluvium derived dominantly from tuff. Typically, the surface layer is dark brown very cobbly sandy loam about 2 inches thick. The subsoil is brown very cobbly loam about 10 inches thick. Tuff is at a depth of 12 inches.

Permeability of the Lemitar soil is moderate. Available water capacity is very low. Effective rooting depth is 8 to 14 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, bush muhly, blue grama, and sideoats grama. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are sand dropseed, galleta, and fourwing saltbush. The average annual production of air-dry vegetation ranges from 800 pounds per acre in favorable years to 200 pounds in unfavorable years. If the plant community deteriorates, black grama, bush muhly, and sideoats grama decrease and there is an increase in plants such as threeawn, sand dropseed, fluffgrass, broom snakeweed, and creosotebush.

This unit is suited to such management practices as proper grazing use, planned grazing systems, optimal placement of salt for livestock, and livestock trails. This unit has limited suitability for rangeland management practices such as livestock watering facilities and fencing because of slope, stoniness, and the very shallow and shallow depth of the Lemitar soil. Grazing management should be designed to increase the productivity and reproduction of black grama, bush muhly, and sideoats grama.

690—Bluepoint-Caliza complex, 1 to 30 percent slopes. This map unit is on dissected parts of alluvial fans and fan terraces. Areas are irregular in shape and are 100 to 1,000 acres in size. The present vegetation is shrubs and grasses. Elevation is 4,700 to 5,200 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 45 percent Bluepoint very gravelly loamy sand, 1 to 30 percent slopes, and 35 percent Caliza very gravelly loamy coarse sand, 1 to 30 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of hummocky Bluepoint soils that have a gravelly surface layer and are in the more gently sloping areas, sandstone and conglomerate Rock outcrop on ridge crests and steeper side slopes, Badlands of soft, clayey sediment throughout the unit, and Wink and Turney soils on ridge crests. Included areas make up about 20 percent of the total acreage.

The Bluepoint soil is deep and excessively drained. It formed in alluvium derived dominantly from soft sediment and rock. Typically, the surface layer is light brown very gravelly loamy sand about 4 inches thick. The upper 17 inches of the underlying material is light brown and light yellowish brown loamy sand and loamy fine sand, and the lower part to a depth of 60 inches or more is very pale brown fine sand.

Permeability of the Bluepoint soil is rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Caliza soil is deep and well drained. It formed in alluvium and colluvium derived dominantly from soft sediment and rock. Typically, the surface layer is light brown very gravelly loamy coarse sand about 4 inches thick. The upper 37 inches of the underlying material is light brown very gravelly loamy coarse sand and very gravelly coarse sand, and the lower part to a depth of 60 inches or more is reddish yellow very gravelly loamy coarse sand.

Permeability of the Caliza soil is moderately rapid. Available water capacity is very low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, bush muhly, galleta, and sideoats grama. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are New Mexico feathergrass and blue grama. The average annual production of air-dry vegetation ranges from 600 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, black grama, bush muhly, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as galleta, fluffgrass, threeawn, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama, bush muhly, sideoats grama, and New Mexico feathergrass.

695—Deltajo very channery loam, 5 to 45 percent slopes. This moderately deep, well drained soil is on cuestas (fig. 3). It formed in alluvium derived dominantly from siltstone. Areas are irregular in shape and are 150 to 3,000 acres in size. The present vegetation is grass and shrubs. Elevation is 5,000 to 5,700 feet. The average annual precipitation is about 8 to 10 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

Typically, the surface layer is reddish brown very channery loam about 2 inches thick. The subsoil is reddish brown and light reddish brown channery loam about 11 inches thick. The substratum is reddish brown channery silt loam about 9 inches thick. Soft siltstone is at a depth of 22 inches.

Included in this unit are small areas of soils that are similar to this Deltajo soil but have a very flaggy loam or stony loam surface layer and are on cuesta scarp faces that have slopes of as much as 55 percent, sandstone Rock outcrop in the form of ledges and small cliffs, Lithic Torriorthents over sandstone bedrock, soils that are similar to the Barana soils but are gravelly throughout and are in small valleys between cuestas, Arizo soils and Riverwash in arroyo channel areas, Lozier soils in areas of limestone bedrock, and Elbutte soils on cuesta scarp faces on the Sevilleta National Wildlife Refuge. Included areas make up about 30 percent of the total acreage.

Permeability of this soil is moderate. Available water capacity is low to very low. Effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is only moderate because of the desert pavement of siltstone channery fragments on the soil surface.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, sideoats grama, blue grama, galleta, fourwing saltbush, and littleleaf sumac. The average annual production of air-dry vegetation ranges from 900 pounds per acre in favorable years to 350 pounds in unfavorable years. If the plant community deteriorates, black grama and sideoats grama decrease and there is an increase in plants such as galleta, hairy grama, threeawn, broom snakeweed, and creosotebush.

This unit is suited to such management practices as proper grazing use, planned grazing systems, proper placement of salt for livestock, and livestock trail construction. Installing watering facilities and fencing are difficult because of the slope. Grazing management should be designed to increase the productivity and reproduction of black grama and sideoats grama.

696—Lithic Torriorthents-Lozier-Rock outcrop association, 25 to 70 percent slopes. This map unit is on hogbacks, ridges, and canyon escarpments (fig. 4). Areas are irregular in shape and are 200 to 1,500 acres in size. The present vegetation is grass and shrubs. Elevation is 4,900 to 6,300 feet. The average annual precipitation is about 9 to 11 inches, the average annual air temperature is 57 to 62 degrees F, and the average frost-free period is 180 to 210 days.

This unit is 40 percent Lithic Torriorthents, 45 to 70 percent slopes, 25 percent Lozier very flaggy fine sandy loam, 25 to 45 percent slopes, and 20 percent Rock outcrop. Lithic Torriorthents are on back slopes and structural benches of hogback scarp faces, ridges, and canyon escarpments. The Lozier soil is on dip slopes of hogbacks and summit areas of ridges. Rock outcrop is present as ledges and large cliffs on hogback scarp faces, ridge back slopes, and canyon escarpments.

Included in this unit are small areas of soils that are shallow or moderately deep to gypsum or soft gypsiferous sandstone on foot slopes and toe slopes, barren areas of exposed soft gypsum that are on some hogbacks and are in Sevilleta National Wildlife Refuge, Lozier very stony loam on hogback dip slopes of as much as 55 percent, and Lithic Torriorthents in areas where slopes are less than 45 percent. Included areas make up about 15 percent of the total acreage.

Figure 3.—Typical area of Deltajo very channery loam, 5 to 45 percent slopes.

The Lithic Torriorthents are very shallow and shallow and are well drained. They formed in colluvium and alluvium derived dominantly from sandstone. No single profile of these soils is typical, but one commonly observed in the survey area has a surface layer of brown very stony sandy loam about 6 inches thick. Hard sandstone is at a depth of 6 inches.

Permeability of Lithic Torriorthents is moderately rapid to rapid. Available water capacity is very low. Effective rooting depth is 2 to 20 inches. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is slight.

The Lozier soil is very shallow and shallow and is well drained. It formed in alluvium derived dominantly from limestone. Typically, the surface layer is yellowish brown very flaggy fine sandy loam about 2 inches thick. The underlying material is light yellowish brown and very pale brown very flaggy loam about 10 inches thick. Limestone is at a depth of 12 inches.

Permeability of the Lozier soil is moderate. Available water capacity is very low. Effective rooting depth is 6 to 16 inches. Runoff is rapid, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

Rock outcrop is exposed areas of sandstone or limestone. There is little if any vegetation in these areas. Runoff is rapid.

This unit is for livestock grazing and wildlife habitat.

The potential natural plant community on the Lozier soil is characterized mainly by black grama, bush muhly, sideoats grama, blue grama, and feather dalea. The average annual production of air-dry vegetation ranges from 650 pounds per acre in favorable years to 275 pounds in unfavorable years. If the plant community deteriorates, black grama, bush muhly, and sideoats grama decrease and there is an increase in plants such as fluffgrass, threeawn, broom snakeweed, and slim tridens.

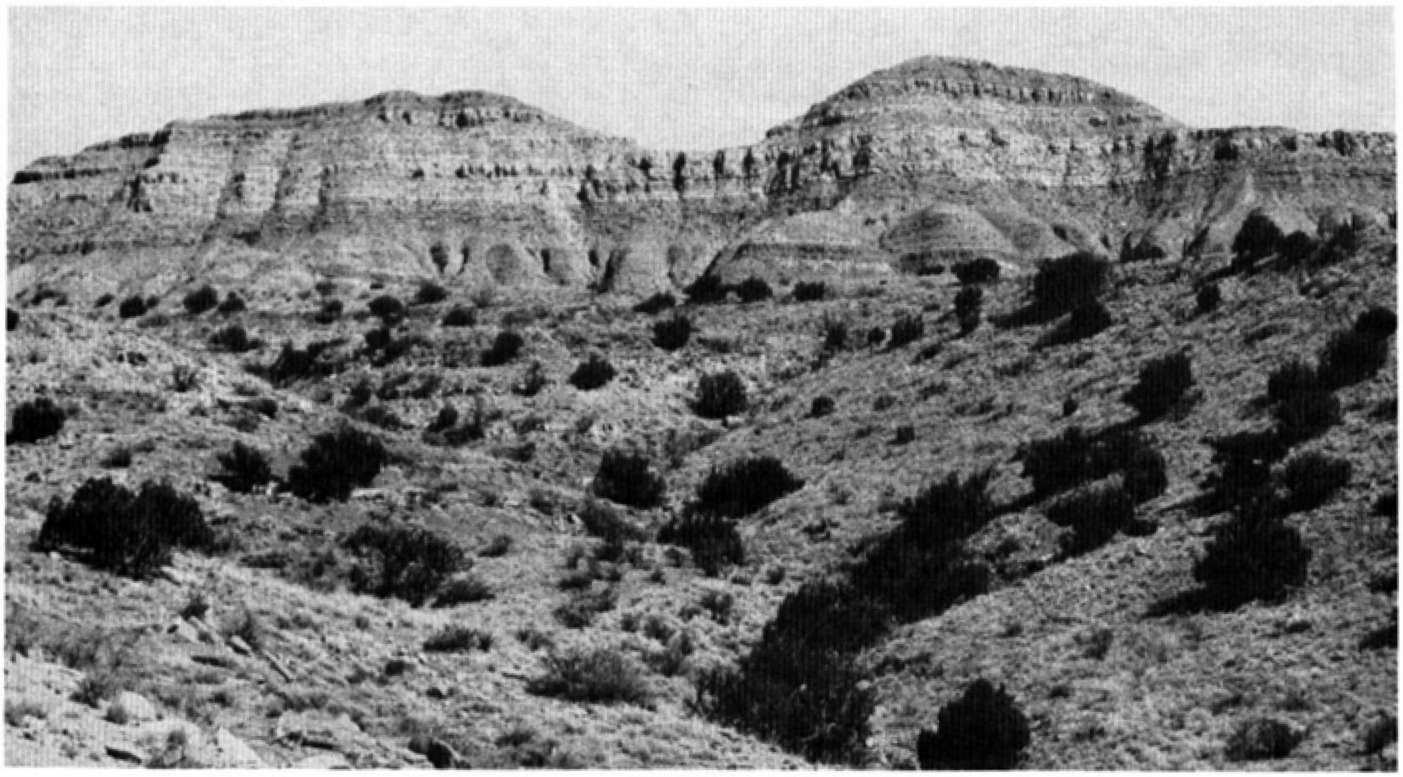


Figure 4.—Typical area of Lithic Torriorthents-Lozier-Rock outcrop association, 25 to 70 percent slopes.

This unit is suited to such management practices as proper grazing use, planned grazing systems, optimal placement of salt for livestock, livestock trails, and fencing. This unit has limited suitability for livestock watering facilities because of slope and very shallow and shallow soil depth. Grazing management should be designed to increase the productivity and reproduction of black grama, bush muhly, and sideoats grama.

705—Socorro-Flaco complex, 2 to 15 percent slopes. This map unit is on basalt capped mesas. Areas are irregular in shape and are 600 to 5,000 acres in size. The present vegetation is grass and trees. Elevation is 5,700 to 6,600 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 52 to 55 degrees F, and the average frost-free period is 140 to 160 days.

This unit is 40 percent Socorro very gravelly fine sandy loam, 2 to 7 percent slopes, and 35 percent Flaco fine sandy loam, 2 to 15 percent slopes. The Socorro soil is on the tops and sides of knolls, and the Flaco soil is on the sides of knolls.

Included in this unit are small areas of basalt Rock outcrop on knoll tops and on side slopes of small canyons, a soil that is similar to the Flaco soil but is deep and is in drainageways, a soil that is similar to the Flaco soil but has more than 35 percent rock fragments and is throughout the unit, Harvey and Dean soils on knoll tops and also in open stable areas, soils that are similar to the Socorro soil but have a cobbly loam surface layer and have slopes of less than 8 percent, and soils that are similar to the Socorro soil but have a stony loam and very stony loam surface layer, have slopes of as much as 45 percent, and are on Black Mesa. Included areas make up about 25 percent of the total acreage.

The Socorro soil is moderately deep and well drained. It formed in alluvium derived dominantly from basalt and loess. Typically, the surface layer is brown very gravelly fine sandy loam about 3 inches thick. The subsoil is brown very gravelly loam about 8 inches thick. The substratum is pink very cobbly loam and very gravelly loam about 14 inches thick. Basalt is at a depth of 25 inches.

Permeability of the Socorro soil is moderate. Available water capacity is very low. Effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Flaco soil is moderately deep and well drained. It formed in local alluvium derived dominantly from basalt. Typically, the surface layer is brown fine sandy loam about 1 inch thick. The subsoil is dark brown clay loam about 7 inches thick. The substratum is light brown gravelly clay loam about 14 inches thick. Basalt is at a depth of 22 inches.

Permeability of the Flaco soil is moderately slow. Available water capacity is low. Effective rooting depth is 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by western wheatgrass, black grama, blue grama, sideoats grama, and galleta. Oneseed juniper is present in scattered stands. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 500 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, black grama, and sideoats grama decrease and there is an increase in plants such as galleta, blue grama, threeawn, oneseed juniper, broom snakeweed, and walkingstick cholla.

This unit is suited to such management practices as proper grazing use, planned grazing systems, and livestock watering facilities. Fencing and constructing pipelines for providing water for livestock are difficult because of the moderate depth to basalt and inaccessibility. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass, black grama, and sideoats grama.

709—Penistaja-Clovis fine sandy loams, 1 to 8 percent slopes. This map unit is on fan terraces and plains. Areas are irregular in shape and are 100 to 1,500 acres in size. The present vegetation is grass and scattered juniper. Elevation is 5,500 to 6,600 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 40 percent Penistaja fine sandy loam and 35 percent Clovis fine sandy loam. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Harvey, Palma, and Gabaldon soils and soils that are similar to the Penistaja and Clovis soils but are moderately deep over limestone or gypsum. These included areas are throughout the unit. There are also areas of eroded soils in the Claunch area. Included areas make up about 25 percent of the total acreage.

The Penistaja soil is deep and well drained. It formed in alluvial and eolian material. Typically, the surface layer is brown and dark brown fine sandy loam about 4 inches thick. The upper 33 inches of the subsoil is brown sandy clay loam, and the lower 8 inches is strong brown fine sandy loam. Below this to a depth of 60 inches or more is a buried subsoil of pinkish white gravelly sandy loam.

Permeability of the Penistaja soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Clovis soil is deep and well drained. It formed in alluvium. Typically, the surface layer is brown fine sandy loam about 4 inches thick. The subsoil is light brown and brown sandy clay loam about 26 inches thick. The substratum to a depth of 60 inches or more is pink and pinkish white sandy clay loam and clay loam.

Permeability of the Clovis soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by blue grama, western wheatgrass, galleta, and fourwing saltbush. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are sideoats grama and black grama. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, western wheatgrass, and sideoats grama decrease and there is an increase in plants such as blue grama, sand dropseed, galleta, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass, black grama, and sideoats grama.

716—Creel-Musofare-Clovis complex, 1 to 15 percent slopes. This map unit is on mesas, knolls, cuestas, and fan terraces. Areas are irregular in shape and are 125 to 5,000 acres in size. The present vegetation is grass and trees. Elevation is 5,600 to 6,600 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 52 to 56 degrees F, and the average frost-free period is 160 to 180 days.

This unit is 35 percent Creel channery loam, 1 to 9 percent slopes, 30 percent Musofare channery loam, 2 to 15 percent slopes, and 15 percent Clovis fine sandy loam, 5 to 10 percent slopes. Creel and Musofare soils are on knolls, cuestas, and mesas. Clovis soils are on fan terraces below knolls.

Included in this unit are small areas of soils that are similar to the Creel soil but are more than 35 percent rock fragments, Creel and Musofare soils that have a stony surface layer and are throughout the unit, soils that are similar to the Creel and Musofare soils but have shale or soft sandstone above a depth of 20 inches and are near the crest of knolls, Harvey soils on fan toe slopes at the base of knolls, areas of soils that have slopes of as much as 25 percent, La Fonda and Alicia soils in swales between cuestas, Ponciano soils, and soils that are similar to the Creel soil but have a very bouldery loam surface layer and are on cuesta scarp faces near U.S. Highway 60. Included areas make up about 20 percent of the total acreage.

The Creel soil is moderately deep and well drained. It formed in alluvium derived dominantly from siltstone and sandstone. Typically, the surface layer is brown channery loam about 3 inches thick. The upper 7 inches of the underlying material is light brown channery loam, and the lower 13 inches is pink channery loam and channery fine sandy loam. Soft sandstone is at a depth of 23 inches.

Permeability of the Creel soil is moderate. Available water capacity is very low. Effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Musofare soil is moderately deep and well drained. It formed in alluvium derived dominantly from sandstone and siltstone. Typically, the surface layer is brown channery loam about 2 inches thick. The subsoil is brown very channery clay loam about 12 inches thick. The substratum is light reddish brown channery loam about 12 inches thick. Soft sandstone is at a depth of 26 inches.

Permeability of the Musofare soil is moderately slow. Available water capacity is very low. Effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Clovis soil is deep and well drained. It formed in alluvium. Typically, the surface layer is brown fine sandy loam about 2 inches thick. The subsoil is brown loam about 18 inches thick. The upper 21 inches of the substratum is pink loam, and the lower part to a depth of 60 inches or more is light brown fine sandy loam and loam.

Permeability of the Clovis soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Creel soil is characterized mainly by blue grama, galleta, sideoats grama, and black grama. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are western wheatgrass and scattered oneseed juniper. The average annual production of air-dry vegetation ranges from 1,300 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, black grama, and western wheatgrass decrease and there is an increase in plants such as blue grama, galleta, threeawn, and ring muhly.

The potential natural plant community on the Musofare soil is characterized mainly by black grama, sideoats grama, blue grama, New Mexico feathergrass, and wolftail. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are galleta and oneseed juniper. The average annual production of air-dry vegetation ranges from 1,100 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as blue grama, wolftail, galleta, threeawn, and oneseed juniper.

The potential natural plant community on the Clovis soil is characterized mainly by blue grama, galleta, western wheatgrass, and sideoats grama. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are black grama and fourwing saltbush. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, sideoats grama, and black grama decrease and there is an increase in plants such as blue grama, galleta, ring muhly, and broom snakeweed. This unit is susceptible to invasion by walkingstick cholla.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, livestock watering facilities, and cholla control. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and western wheatgrass.

717—Penistaja-Clovis fine sands, 1 to 7 percent slopes. This map unit is on hummocky, sand mantled knolls and bajadas. Areas are irregular in shape and are 750 to 3,000 acres in size. The present vegetation is shrubs and grass. Elevation is 5,200 to 5,600 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 53 to 57 degrees F, and the average frost-free period is 150 to 180 days.

This unit is 40 percent Penistaja fine sand, 1 to 7 percent slopes, and 35 percent Clovis fine sand, 2 to 5 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Mespun soils on hills and dunes adjacent to Chupadera Arroyo, a soil that is similar to the Penistaja soil but has bedrock at a moderate depth, Pirodel soils on summits of knolls throughout the unit, and soils that are similar to the Penistaja and Clovis soils but are warmer and are in the southern part of the unit. Included areas make up about 25 percent of the total acreage.

The Penistaja soil is deep and well drained. It formed in alluvial and eolian sediment. Typically, the surface layer is brown fine sand about 4 inches thick. The upper 7 inches of the subsoil is brown loamy fine sand, and the lower 14 inches is brown sandy clay loam. The upper 17 inches of the substratum is strong brown fine sandy loam, and the lower part to a depth of 60 inches or more is pink fine sandy loam.

Permeability of the Penistaja soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high.

The Clovis soil is deep and well drained. It formed in eolian material and alluvium. Typically, the surface layer is reddish brown fine sand about 3 inches thick. The upper 9 inches of the subsoil is reddish brown sandy loam, and the lower 31 inches is reddish brown and light reddish brown clay loam. The substratum to a depth of 60 inches or more is light reddish brown clay loam.

Permeability of the Clovis soil is moderate. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, blue grama, Indian ricegrass, sand dropseed, and sand sagebrush. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are needleandthread and galleta. The average annual production of air-dry vegetation ranges from 1,300 pounds per acre in favorable years to 250 pounds in unfavorable years. If the plant community deteriorates, black grama, Indian ricegrass, and needleandthread decrease and there is an increase in plants such as sand dropseed, galleta, threeawn, and sand sagebrush.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama and Indian ricegrass.

718—Palma, thick surface-Penistaja-Palma complex, 1 to 5 percent slopes. This map unit is on fan terraces and in swales. Areas are irregular in shape and are 100 to 1,500 acres in size. The present vegetation is grass, pinyon, and juniper. Elevation is 5,700 to 6,600 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 30 percent Palma fine sand, 1 to 5 percent slopes, 25 percent Penistaja fine sandy loam, 1 to 5 percent slopes, and 20 percent Palma loamy fine sand, 1 to 5 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Mespun soils throughout the unit and Gabaldon soils in sinkholes. Included areas make up about 25 percent of the total acreage.

The Palma fine sand is deep and well drained. It formed in alluvium derived dominantly from eolian sand deposits. Typically, the surface layer is dark brown fine sand about 3 inches thick. The underlying material is brown fine sand about 20 inches thick. The next layer is a buried subsoil of strong brown fine sandy loam about 12 inches thick over strong brown sandy loam about 18 inches thick. Below this to a depth of 60 inches or more is brown fine sandy loam.

Permeability of the Palma fine sand is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high.

The Penistaja soil is deep and well drained. It formed in alluvium derived dominantly from eolian deposits. Typically, the surface layer is brown fine sandy loam about 2 inches thick. The upper 20 inches of the subsoil is brown sandy clay loam, and the lower 8 inches is brown fine sandy loam. The substratum to a depth of 46 inches is strong brown fine sandy loam. Below this is a buried subsoil of pinkish white sandy clay loam that extends to a depth of 60 inches or more.

Permeability of the Penistaja soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Palma loamy fine sand is deep and well drained. It formed in alluvium derived dominantly from eolian deposits. Typically, the surface layer is brown loamy fine sand about 3 inches thick. The subsoil is brown and strong brown fine sandy loam about 29 inches thick. The substratum to a depth of 60 inches or more is strong brown and reddish yellow loamy fine sand.

Permeability of the Palma loamy fine sand is moderately rapid. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Palma fine sand is characterized mainly by sand bluestem, little bluestem, Indian ricegrass, blue grama, and scattered oneseed juniper. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are sand sagebrush and sand dropseed. The average annual production of air-dry vegetation ranges from 1,800 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, sand bluestem, little bluestem, and Indian ricegrass decrease and there is an increase in plants such as sand dropseed, blue grama, sand sagebrush, and oneseed juniper. Severe deterioration of the potential natural plant community may result in nearly total domination by oneseed juniper.

The potential natural plant community on the Penistaja soil is characterized mainly by western wheatgrass, blue grama, galleta, and sideoats grama. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass and sideoats grama decrease and there is an increase in plants such as blue grama, galleta, sand dropseed, and broom snakeweed.

The potential natural plant community on the Palma loamy fine sand is characterized mainly by blue grama, sideoats grama, little bluestem, sand bluestem, and Indian ricegrass. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are black grama, galleta, and sand sagebrush. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 250 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, little bluestem, sand bluestem, Indian ricegrass, and black grama decrease and there is an increase in plants such as blue grama, sand dropseed, spike dropseed, and sand sagebrush. Oneseed juniper may invade. Severe deterioration of the potential natural plant community may result in nearly total domination by oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Brush management of oneseed juniper and sand sagebrush is an acceptable practice on the soils in this unit when accompanied by deferment from grazing. Low rainfall limits rangeland seeding. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass, little bluestem, sand bluestem, and sideoats grama.

This unit has very limited suitability for the production of wood products such as firewood and fenceposts. Dense stands of oneseed juniper may become established. On the basis of a site index of 20, the unit can produce 2 to 3 cords of wood per acre per year in a stand of trees that average 5 inches in diameter at a height of 1 foot.

724—Gabaldon silt loam, 0 to 2 percent slopes. This deep, well drained soil is in swales. It formed in recent alluvium. Areas are irregular in shape and are 100 to 1,000 acres in size. The present vegetation is grass. Elevation is 5,300 to 6,500 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 52 to 57 degrees F, and the average frost-free period is 150 to 180 days.

Typically, the surface layer is brown silt loam about 2 inches thick. The upper 41 inches of the subsoil is grayish brown silty clay loam, and the lower 12 inches is pale brown silty clay loam. The substratum to a depth of 60 inches or more is light brown clay loam.

Included in this unit are small areas of San Mateo, Calabasas, and Manzano soils and soils that are similar to this Gabaldon soil but have a finer textured subsoil. Also included are areas of Gabaldon soils that are subject to ponding. Included areas make up about 25 percent of the total acreage.

Permeability of this Gabaldon soil is moderate. Available water capacity is very high. Effecting rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high. This soil is subject to occasional periods of flooding during convective storms in summer.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized mainly by alkali sacaton, western wheatgrass, vine-mesquite, and fourwing saltbush. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are giant sacaton and blue grama. The average annual production of air-dry vegetation ranges from 4,000 pounds per acre in favorable years to 1,800 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, vine-mesquite, and giant sacaton decrease and there is an increase in plants such as blue grama, galleta, mat muhly, and broom snakeweed. Deterioration of the vegetation on this unit commonly results in the formation of gullies, which drain the unit and reduce production of vegetation.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, installing pipelines for providing water for livestock, erosion control practices, and grade stabilization structures. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass, vine-mesquite, and alkali sacaton.

735—Netoma-Claunch association, 2 to 10 percent slopes. This map unit is on knolls, fan terraces, and bajadas. Areas are irregular in shape and are 300 to 2,200 acres in size. The present vegetation is grass. Elevation is 5,500 to 6,500 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 53 to 57 degrees F, and the average frost-free period is 150 to 180 days.

This unit is 45 percent Netoma loam, 2 to 10 percent slopes, and 35 percent Claunch fine sandy loam, 2 to 6 percent slopes. The Netoma soil is on knolls and short fan terraces, and the Claunch soil is on broad fan terraces.

Included in this unit are small areas of Jornaham and Rayohill soils on hills above areas of the Claunch soil, La Fonda soils in drainageways, Netoma soils on hills where slopes are more than 10 percent, and Dean soils in convex areas on fan terraces in the northwestern part of the Jornada del Muerto. Included areas make up about 20 percent of the total acreage.

The Netoma soil is deep and well drained. It formed in alluvium derived dominantly from gypsum. Typically, the surface layer is very pale brown loam about 2 inches thick. The upper 7 inches of the subsoil is white silt loam, and the lower 10 inches is white loam. The upper 12 inches of the substratum is very pale brown silt loam, and the lower part to a depth of 60 inches or more is very pale brown loam.

Permeability of the Netoma soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high. This soil is slightly saline.

The Claunch soil is deep and well drained. It formed in alluvium. Typically, the surface layer is brown fine sandy loam about 2 inches thick. The upper 26 inches of the subsoil is light brown and pink loam, and the lower 8 inches is pink loam. The substratum to a depth of 60 inches or more is pink and reddish brown loam and sandy loam.

Permeability of the Claunch soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high. This soil is slightly saline.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Netoma soil is characterized mainly by black grama, alkali sacaton, gyp dropseed, fourwing saltbush, and coldenia. The average annual production of air-dry vegetation ranges from 750 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, black grama and alkali sacaton decrease and there is an increase in plants such as gyp dropseed, coldenia, Bigelow sagebrush, and Mormon-tea.

The potential natural plant community on the Claunch soil is characterized mainly by black grama, blue grama, New Mexico feathergrass, Indian ricegrass, winterfat, and scattered oneseed juniper. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, western wheatgrass, and winterfat decrease and there is an increase in plants such as blue grama, galleta, ring muhly, threeawn, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Brush management is an acceptable practice on the Claunch soil when accompanied by deferment from grazing. Grazing management should be designed to increase the productivity and reproduction of black grama and the cool season grasses such as New Mexico feathergrass.

736—Winona-Tanbark-La Fonda complex, 1 to 20 percent slopes. This map unit is on cuestas, knolls, hills, and fan terraces. Areas are irregular in shape and are 100 to 3,000 acres in size. The present vegetation is grass and trees. Elevation is 5,400 to 6,200 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 53 to 57 degrees F, and the average frost-free period is 150 to 180 days.

This unit is 30 percent Winona very channery loam, 1 to 20 percent slopes, 25 percent Tanbark fine sandy loam, 3 to 15 percent slopes, and 20 percent La Fonda loam, 3 to 7 percent slopes. The Winona soil is on hills and cuestas, the Tanbark soil is on cuestas and knolls, and the La Fonda soil is on fan terraces and in drainageways and depresssional areas between cuestas and hills.

Included in this unit are small areas of Harvey soils on fan terraces, Netoma soils on short fan terraces below areas of gypsum Rock outcrop, and Rock outcrop on hills and cuestas. Included areas make up about 25 percent of the total acreage.

The Winona soil is very shallow and shallow and is well drained. It formed in alluvium derived dominantly from limestone. Typically, the surface layer is brown very channery loam about 1 inch thick. The underlying material is yellowish brown very channery loam about 10 inches thick. Limestone is at a depth of 11 inches.

Permeability of the Winona soil is moderate. Available water capacity is very low. Effective rooting depth is 7 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

The Tanbark soil is shallow and well drained. It formed in alluvium derived dominantly from gypsum. Typically, the surface layer is light yellowish brown fine sandy loam about 2 inches thick. The underlying material is white gypsiferous silt loam about 14 inches thick. Gypsum is at a depth of 16 inches.

Permeability of the Tanbark soil is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

The La Fonda soil is deep and well drained. It formed in alluvium. Typically, the surface layer is light brown loam about 2 inches thick. The subsoil is brown loam about 27 inches thick. The substratum to a depth of 60 inches or more is light brown loam.

Permeability of the La Fonda soil is moderate. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Winona soil is characterized mainly by curlyleaf muhly, New Mexico feathergrass, black grama, and sideoats grama. Scattered oneseed juniper may be present on the Winona soil. The average annual production of air-dry vegetation ranges from 1,400 pounds per acre in favorable years to 700 pounds in unfavorable years. If the plant community deteriorates, New Mexico feathergrass, black grama, and sideoats grama decrease and there is an increase in plants such as threeawn, galleta, broom snakeweed, and oneseed juniper.

The potential natural plant community on the Tanbark soil is characterized mainly by black grama, alkali sacaton, galleta, gyp dropseed, and coldenia. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are scattered oneseed juniper and Bigelow sagebrush. The average annual production of air-dry vegetation ranges from 750 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, black grama and alkali sacaton decrease and there is an increase in plants such as gyp dropseed, Bigelow sagebrush, coldenia, banana yucca, and oneseed juniper.

The potential natural plant community on the La Fonda soil is characterized mainly by blue grama, galleta, black grama, and western wheatgrass. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are sideoats grama and bottlebrush squirreltail. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, western wheatgrass, and sideoats grama decrease and there is an increase in plants such as blue grama, galleta, threeawn, ring muhly, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Installing pipelines for providing water for livestock is difficult on the Winona and Tanbark soils because of the very shallow and shallow depth to limestone. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, New Mexico feathergrass, and western wheatgrass.

737—Harvey-La Fonda association, 1 to 9 percent slopes. This map unit is on fan terraces and plains and in swales. Areas are irregular in shape and are 100 to 2,000 acres in size. The present vegetation is grass with areas of scattered oneseed juniper. Elevation is 5,500 to 6,600 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 40 percent Harvey fine sandy loam and 35 percent La Fonda fine sandy loam. The Harvey soil is on convex fan terraces, and the La Fonda soil is in swales and on fan terraces.

Included in this unit are small areas of Clovis soils on fan terraces, Gabaldon and San Mateo soils in swales, soils that are similar to the Harvey soil but are gravelly or have accumulations of calcium carbonate below a depth of 20 inches, and Claunch soils in areas near gypsum Rock outcrop. There are also areas of eroded soils in the Claunch area. Included areas make up about 25 percent of the total acreage.

The Harvey soil is deep and well drained. It formed in alluvium derived dominantly from limestone and eolian material. Typically, the surface layer is pinkish gray fine sandy loam about 2 inches thick. The subsoil is light brown loam about 30 inches thick. Below this to a depth of 60 inches or more is a buried subsoil of pinkish white loam.

Permeability of the Harvey soil is moderate. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The La Fonda soil is deep and well drained. It formed in alluvium derived dominantly from sedimentary rock and eolian material. Typically, the surface layer is brown fine sandy loam about 7 inches thick. The upper 28 inches of the subsoil is brown and light brown loam, and the lower 13 inches is brown sandy clay loam. The substratum to a depth of 60 inches or more is brown sandy clay loam.

Permeability of the La Fonda soil is moderate. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Harvey soil is characterized mainly by black grama, New Mexico feathergrass, blue grama, western wheatgrass, and winterfat. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, western wheatgrass, and winterfat decrease and there is an increase in plants such as blue grama, galleta, threeawn, and broom snakeweed.

The potential natural plant community on the La Fonda soil is characterized mainly by western wheatgrass, blue grama, galleta, sideoats grama, and black grama. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, sideoats grama, and black grama decrease and there is an increase in plants such as blue grama, galleta, threeawn, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass, black grama, and sideoats grama.

738—Harvey-Dean association, 1 to 9 percent slopes. This map unit is on fan terraces, plains, and knolls. Areas are irregular in shape and are 100 to 5,000 acres in size. The present vegetation is grass. Elevation is 5,300 to 6,600 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 57 degrees F, and the average frost-free period is 150 to 180 days.

This unit is 45 percent Harvey very fine sandy loam and 30 percent Dean gravelly fine sandy loam. The Harvey soil is in the lower positions on fan terraces and plains, and the Dean soil is on knolls and the higher positions on fan terraces.

Included in this unit are small areas of soils that are similar to the Harvey and Dean soils but are high in content of calcium carbonate below a depth of 20 inches, soils that are similar to the Harvey soil but are gravelly, and Claunch, Rayohill, and Jornaham soils. These included areas are throughout the unit. There are also included areas of Clovis, Cerrillos, and Gabaldon soils in depressional areas and sinkholes and areas of Ildecarb soils and shallow soils throughout the unit. Included areas make up about 25 percent of the total acreage.

The Harvey soil is deep and well drained. It formed in alluvium derived dominantly from limestone and eolian material. Typically, the surface layer is brown very fine sandy loam about 4 inches thick. The upper 6 inches of the subsoil is brown sandy clay loam, and the lower part to a depth of 60 inches or more is pink loam and sandy clay loam.

Permeability of the Harvey soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Dean soil is deep and well drained. It formed in alluvium derived dominantly from limestone. Typically, the surface layer is brown gravelly fine sandy loam about 4 inches thick. The subsoil is light brown gravelly sandy clay loam about 14 inches thick. The upper 40 inches of the substratum is pinkish white and pink gravelly loam, and the lower part to a depth of 60 inches or more is light brown sandy clay loam.

Permeability of the Dean soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, New Mexico feathergrass, blue grama, and winterfat. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are sideoats grama and galleta. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, and sideoats grama decrease and there is an increase in plants such as blue grama, galleta, sand dropseed, threeawn, and Bigelow sagebrush.

This unit is suited to such management practices as proper grazing use, planned grazing systems, developing livestock watering facilities, and fencing.

749—Ildecarb-Dean gravelly loams, 1 to 10 percent slopes. This map unit is on fan terraces and bajadas. Areas are irregular in shape and are 100 to 2,000 acres in size. The present vegetation is grass and scattered junipers. Elevation is 5,300 to 6,500 feet. The average annual precipitation is about 10 to 15 inches, the average annual air temperature is 50 to 57 degrees F, and the average frost-free period is 150 to 180 days.

This unit is 50 percent Ildecarb gravelly loam, 1 to 10 percent slopes, and 30 percent Dean gravelly loam, 1 to 10 percent slopes. The Ildecarb soil is in the higher, more convex areas of the unit, and the Dean soil is in the lower, more concave areas.

Included in this unit are small areas of Harvey and La Fonda soils in swales; Cascajo and Ladron soils and soils that are similar to Cascajo soils but have a dark colored surface layer and are along the Lincoln County line, northeast of Claunch; and Jornaham soils in convex areas. Included areas make up about 20 percent of the total acreage.

The Ildecarb soil is deep and well drained. It formed in alluvium derived dominantly from limestone, siltstone, and gypsum. Typically, the surface layer is brown and pale brown gravelly loam about 16 inches thick. The upper 32 inches of the underlying material is white very gravelly sandy loam and extremely gravelly loam, and the lower part to a depth of 60 inches or more is pink extremely gravelly clay loam.

Permeability of the Ildecarb soil is moderately slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Dean soil is deep and well drained. It formed in alluvium derived dominantly from limestone, siltstone, and gypsum. Typically, the surface layer is brown and pale brown gravelly loam about 10 inches thick. The upper 40 inches of the underlying material is white and pink gravelly sandy clay loam, and the lower part to a depth of 60 inches or more is pink sandy clay loam.

Permeability of the Dean soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Ildecarb soil is characterized mainly by black grama, New Mexico feathergrass, sideoats grama, blue grama, and winterfat. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are galleta and wolftail. The average annual production of air-dry vegetation ranges from 1,100 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant comunity deteriorates, black grama, New Mexico feathergrass, and sideoats grama decrease and there is an increase in plants such as blue grama, galleta, threeawn, and broom snakeweed.

The potential natural plant community on the Dean soil is characterized mainly by black grama, New Mexico feathergrass, blue grama, and winterfat. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are sideoats grama and galleta. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, and sideoats grama decrease and there is an increase in plants such as blue grama, galleta, sand dropseed, threeawn, Bigelow sagebrush, and broom snakeweed.

Oneseed juniper and some pinyon are present in some of the steeper, more broken areas of this unit.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama, western wheatgrass, and sideoats grama.

760—Sedillo-Clovis Association, 1 to 6 percent slopes. This map unit is on fan terraces and bajadas. Areas are elongated in shape and are 400 to 2,000 acres in size. The present vegetation is grass. Elevation is 5,200 to 5,600 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 53 to 57 degrees F, and the average frost-free period is 165 to 180 days.

This unit is 60 percent Sedillo gravelly fine sandy loam, 1 to 6 percent slopes, and 25 percent Clovis sandy loam, 1 to 3 percent slopes. The Sedillo soil is on ridges and the higher parts of fan terraces and bajadas, and the Clovis soil is in slightly concave areas and on the lower parts of fan terraces.

Included in this unit are small areas of Manzano soils in swales and drainageways, a soil that is similar to the Clovis soil but is coarser textured and is in swales, Sedillo soils that have a stony surface layer, Millett soils throughout the unit, and a soil that is similar to the Sedillo soil but is moderately deep and is on the apex of the fan terraces. Included areas make up about 15 percent of the total acreage.

The Sedillo soil is deep and well drained. It formed in gravelly alluvium derived dominantly from granite, quartzite, and schist. Typically, the surface layer is dark brown gravelly fine sandy loam about 3 inches thick. The subsoil is brown very gravelly sandy clay loam about 19 inches thick. The substratum to a depth of 60 inches or more is light brown very gravelly sandy clay loam.

Permeability of the Sedillo soil is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Clovis soil is deep and well drained. It formed in alluvium derived dominantly from granite, quartzite, and schist. Typically, the surface layer is brown sandy loam about 2 inches thick. The subsoil is strong brown sandy clay loam about 23 inches thick. The substratum to a depth of 60 inches or more is light brown gravelly sandy clay loam.

Permeability of the Clovis soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Sedillo soil is characterized mainly by black grama, sideoats grama, New Mexico feathergrass, blue grama, and galleta. The average annual production of air-dry vegetation ranges from 1,100 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as galleta, threeawn, ring muhly, and broom snakeweed.

The potential natural plant community on the Clovis soil is characterized mainly by blue grama, galleta, black grama, and bottlebrush squirreltail. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are fourwing saltbush and western wheatgrass. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, bottlebrush squirreltail, and western wheatgrass decrease and there is an increase in plants such as galleta, burrograss, threeawn, ring muhly, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, New Mexico feathergrass, and western wheatgrass.

765—Puertecito, moist-Rock outcrop complex, 15 to 60 percent slopes. This map unit is on low mountains and hills. Areas are elongated in shape and are 500 to 4,000 acres in size. The present vegetation is grass, shrubs and scattered juniper trees. Elevation is 5,500 to 7,500 feet. The average annual precipitation is 11 to 14 inches, the average annual air temperature is 52 to 56 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 45 percent Puertecito very stony loam, 15 to 60 percent slopes, and 20 percent Rock outcrop that occurs as cliffs and ledges throughout the map unit. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of soils on north- or northeast-facing slopes that are similar in texture to the Puertecito soil but are moderately deep to schist and have a darker colored surface layer, Puertecito very gravelly loam and similar soils that have a very channery or very flaggy loam surface layer and are throughout the unit, soils that are similar to the Puertecito soil but are moderately deep and have developed in colluvial deposits on foot slopes, Puertecito soils that have slopes of less than 15 percent and are in saddles and on summits of hills and mountains, soils that are similar to the Puertecito soil but are shallow to soft, highly fractured schist, small very steep areas of Rubble land at the base of large cliffs, and Sedillo and Cascajo soils that have slopes of less than 15 percent and are on small fan terraces and toe slopes. Included areas make up about 35 percent of the total acreage.

The Puertecito soil is very shallow and shallow and is well drained. It formed in colluvium derived dominantly from schist, quartzite, and granite. Typically, the surface layer is dark brown very stony loam about 2 inches thick. The subsoil is brown very channery clay loam about 12 inches thick. Schist is at a depth of 14 inches.

Permeability of the Puertecito soil is moderately slow. Available water capacity is very low. Effective rooting depth is 6 to 20 inches. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is moderate.

The Rock outcrop occurs as exposed areas of schist, quartzite, and granite. There is little if any vegetation in these areas. Runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Puertecito soil is characterized by sideoats grama, black grama, New Mexico feathergrass, and blue grama. Other important plants that are present in amounts smaller than those characterizing the potential natural plant community are little bluestem and scattered oneseed juniper on north-facing slopes. The average annual production of air-dry vegetation ranges from 1,400 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, black grama, and New Mexico feathergrass decrease and there is an increase in plants such as blue grama, threeawn, wolftail, and oneseed juniper.

This unit is suited to such management practices as proper grazing use and planned grazing systems. Developing livestock watering facilities and fencing are difficult because of slope and the very shallow and shallow depth of the soils. Because of the slope, management practices such as properly locating salt and livestock trails are needed to help distribute livestock grazing. Grazing management should be designed to increase the productivity and reproduction of sideoats grama, black grama, and New Mexico feathergrass.

783—Ponciano very bouldery clay loam, 15 to 60 percent slopes. This deep, well drained soil is on hillslopes below mesas and on cuesta scarp faces. It formed in colluvium derived dominantly from sandstone and mudstone. Areas are long and narrow and are 100 to 1,500 acres in size. The present vegetation is grass and scattered trees. Elevation is 5,600 to 6,600 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 52 to 57 degrees F, and the frost-free period is 160 to 180 days.

Typically, the surface layer is reddish brown very bouldery clay loam about 3 inches thick. The subsoil is reddish brown channery silty clay loam about 32 inches thick. The substratum to a depth of 60 inches or more is reddish brown shaly and very shaly silty clay loam.

Included in this unit are small areas of sandstone Rock outcrop near the summit areas of mesas, clayey soils that are shallow and moderately deep to mudstone and are adjacent to Rock outcrop, soils that are similar to this Ponciano soil but have less clay, more lime, or more rock fragments in the profile, Riverwash and adjacent stratified soils that have a bouldery surface layer and are in arroyo channels, La Fonda soils that have slopes of less than 15 percent and are on toe slopes above arroyo channels soils that are similar to Creel soils but have a very stony or very bouldery surface layer and are on cuesta scarp faces near U.S. Highway 60, and soils that are similar to this Ponciano soil but have a very channery or flaggy loam surface layer and are near the Sevilleta National Wildlife Refuge.

Included areas make up about 30 percent of the total acreage.

Permeability of this soil is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate. This soil is slightly saline.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by sideoats grama, black grama, needlegrass, blue grama, and galleta. Oneseed juniper is present in scattered stands. The average annual production of air-dry vegetation ranges from 1,000 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, black grama, and needlegrass decrease and there is an increase in plants such as galleta, hairy grama, threeawn, broom snakeweed, and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Installing pipelines for providing water for livestock is difficult because of the slope and bouldery texture of the soils. Grazing management should be designed to increase the productivity and reproduction of sideoats grama, black grama, and needlegrass.

785—Torriorthents, ustic-Rock outcrop complex, 10 to 60 percent slopes. This map unit is on mesa escarpments, hogbacks, hills, low mountains, buttes, and canyonsides. Areas are irregular in shape and are 500 to 1,500 acres in size. The present vegetation is grass, shrubs, and trees. Elevation is 5,400 to 8,000 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 57 degrees F, and the average frost-free period is 140 to 180 days.

This unit is 35 percent Torriorthents, ustic, extremely stony sandy clay loam, 10 to 60 percent slopes, and 30 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Mion and Travessilla soils, deep loamy soils that have a dark colored surface layer, Badland, and soils that have a developed subsoil or horizons of calcium carbonate accumulation and are throughout the unit. Included areas make up about 35 percent of the total acreage.

The Torriorthents, ustic, are very shallow to deep and are well drained. They formed in colluvium derived dominantly from sedimentary and igneous sources. No single profile of these soils is typical, but one commonly observed in the survey area has a surface layer of brown extremely stony sandy clay loam about 2 inches thick. The underlying material to a depth of 60 inches or more is strong brown clay.

Permeability of the Torriorthents, ustic, is rapid to very slow. Available water capacity is very low to very high. Effective rooting depth is 1 to 60 inches or more. Runoff is rapid to medium, and the hazard of water erosion is moderate to high. The hazard of soil blowing is slight to high.

The Rock outcrop consists of exposed areas of sandstone, basalt, and rhyolite that occur as ledges, bedding planes, ridges, and small cliffs. It supports little if any vegetation. The runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The soils in this unit support a plant community consisting of sideoats grama, blue grama, black grama, and oneseed juniper. Numerous other species of grass and shrub are present in some areas of this unit because of the variability in location and elevation. This unit has limited suitability for rangeland management practices such as pipelines and fences because of slope and the susceptibility of the soils to damage.

786—Rock outcrop-Badland complex, 25 to 100 percent slopes. This map unit is on ridges, dissected fan toes, hills, and escarpments. Areas are irregular in shape and are 100 to 4,000 acres in size. The present vegetation grows only in areas of included soils. Elevation is 5,500 to 8,000 feet. The average annual precipitation is about 8 to 15 inches, the average annual air temperature is 47 to 64 degrees F, and the average frost-free period is 120 to 210 days.

This unit is 40 percent Rock outcrop and 40 percent Badland.

Included in this unit are small areas of shallow to deep soils on benches. Included areas make up about 20 percent of the total acreage.

Rock outcrop is exposed areas of unweathered basalt, limestone, sandstone, or tuff. There is little if any vegetation in these areas. Surface runoff is rapid.

Badland consists of areas of exposures or cone-shaped hills of soft sandstone or soft shale.

This unit is used as wildlife habitat.

This unit is mainly used as wildlife habitat. It is generally not suited to livestock grazing because of the steepness of slope, inaccessibility, and lack of adequate forage.

788—Penistaja, eroded-Palma, thick surface association, 1 to 3 percent slopes. This map unit is on plains in the Claunch area. Areas are irregular in shape and are 200 to 7,000 acres in size. The present vegetation is grass. Elevation is 6,000 to 6,500 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 45 percent Penistaja fine sandy loam, 1 to 3 percent slopes, and 25 percent Palma loamy fine sand, 1 to 3 percent slopes. The Penistaja soil is in areas of abandoned farmland, and the Palma soil is on edges of fields where sand has accumulated. Both soils are throughout the unit.

Included in this unit are small areas of Clovis soils throughout the unit, Mespun soils on edges of fields, and Gabaldon soils in drainageways. Included areas make up about 30 percent of the total acreage.

The Penistaja soil is deep and well drained. It formed in alluvial and eolian material. Typically, the surface layer is brown fine sandy loam about 6 inches thick. The subsoil is brown and light brown sandy clay loam about 41 inches thick. The upper 9 inches of the substratum is light brown sandy clay loam, and the lower part to a depth of 60 inches or more is pink loam.

Permeability of the Penistaja soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high.

The Palma soil is deep and well drained. It formed in eolian material over alluvium. Typically, the surface layer is strong brown loamy fine sand about 6 inches thick. The subsoil is brown loamy sand about 23 inches thick, the next layer is a buried subsoil of brown and strong brown sandy loam about 18 inches thick. The substratum to a depth of 60 inches or more is pink sandy clay loam.

Permeability of the Palma soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is very high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Penistaja soil is characterized mainly by black grama, blue grama, sand bluestem, and sideoats grama. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are needleandthread, galleta, and Indian ricegrass. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 250 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, sand bluestem, needleandthread, and Indian ricegrass decrease and there is an increase in plants such as blue grama, galleta, and dropseed.

The potential natural plant community on the Palma soil is characterized mainly by little bluestem, sand bluestem, blue grama, Indian ricegrass, sideoats grama, and needleandthread. Sand sagebrush is present in some areas. The average annual production of air-dry vegetation ranges from 2,100 pounds per acre in favorable years to 250 pounds in unfavorable years. If the plant community deteriorates, little bluestem, sand bluestem, sideoats grama, Indian ricegrass, and needleandthread decrease and there is an increase in plants such as blue grama, galleta, sand dropseed, spike dropseed, and sand sagebrush.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and bluestem.

800—Haploborolls, aridic-Rock outcrop complex, 20 to 60 percent slopes. This map unit is on the side slopes of ridges and mountains. Areas are irregular in shape and are 100 to 425 acres in size. The present vegetation is grass and trees. Elevation is 7,500 to 9,200 feet. The average annual precipitation is about 10 to 20 inches, the average annual air temperature is 41 to 46 degrees F, and the average frost-free period is 80 to 115 days.

This unit is 45 percent Haploborolls, aridic, 20 to 60 percent slopes, and 30 percent Rock outcrop. The Haploborolls are on benches between areas of Rock outcrop. Rock outcrop occurs throughout the unit as ledges, ridges, and escarpments.

Included in this unit are small areas of soils that are similar to Haploborolls but have slopes of more than 60 percent, a soil that does not have a dark colored surface layer and is along the Catron County line, and soils that are more highly developed, have more than 35 percent rock fragments, and are throughout the unit. Included areas make up about 25 percent of the total acreage.

The Haploborolls are very shallow to deep and are well drained to somewhat excessively drained. They formed in colluvium and local alluvium. No single profile of these soils is typical, but one commonly observed in the survey area has a surface layer of dark grayish brown cobbly loam about 2 inches thick and have an overlying layer of decomposing plant litter. The subsurface layer is dark grayish brown very gravelly loam about 7 inches thick. The subsoil is dark yellowish brown extremely gravelly sandy clay loam about 12 inches thick. The substratum is yellowish brown extremely gravelly sandy loam about 8 inches thick. Hard tuff is at a depth of 29 inches. Rock fragment content ranges from 10 to 60 percent. Depth to bedrock ranges from 4 to 60 inches or more. The surface is 7 to 15 inches thick.

Permeability of the Haploborolls is slow to rapid. Available water capacity is very low to high. Effective rooting depth is 4 to 60 inches or more. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is moderate.

Rock outcrop consists of exposed areas of tuff. There is little if any vegetation in these areas. Surface runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The Haploborolls support a variable potential natural plant community that is characterized by ponderosa pine, pinyon, Gamble oak, Arizona fescue, pine dropseed, and blue grama. These soils are not suited to livestock grazing because of the inaccessibility and slope.

801—Calabasas association, 0 to 4 percent slopes. This map unit is on bajadas and in adjacent swales. Areas are irregular in shape and are 100 to 1,500 acres in size. The present vegetation is grass. Elevation is 4,900 to 6,300 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 50 to 57 degrees F, and the average frost-free period is 150 to 180 days.

This unit is 45 percent Calabasas clay loam, 2 to 4 percent slopes, and 30 percent Calabasas clay loam, 0 to 2 percent slopes. The Calabasas clay loam, 2 to 4 percent slopes, is in the higher, more stable areas on the landscape, and the Calabasas clay loam, 0 to 2 percent slopes, is in swales and other areas.

Included in this unit are small areas of Gabaldon soils and soils that are similar to these Calabasas soils but have more clay in the profile or have a thinner surface layer, Alicia and Harvey soils, and soils that are similar in texture to these Calabasas soils but have a layer of calcium carbonate accumulation. The included soils are throughout the unit. Included areas make up about 25 percent of the total acreage.

The Calabasas soil, 2 to 4 percent slopes, is deep and well drained. It formed in alluvium derived dominantly from limestone and siltstone. Typically, the surface layer is pale brown clay loam about 6 inches thick. The upper 12 inches of the subsoil is pale brown silt loam, and the lower 16 inches is light yellowish brown clay loam. The substratum to a depth of 60 inches or more is light brown loam.

Permeability of the Calabasas soil is moderately slow. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Calabasas clay loam, 0 to 2 percent slopes, is deep and well drained. It formed in alluvium derived dominantly from limestone and siltstone. Typically, the surface layer is brown clay loam about 5 inches thick. The subsoil is pale brown silty clay loam about 31 inches thick. The substratum to a depth of 60 inches or more is pale brown and brown silty clay loam.

Permeability of the Calabasas clay loam, 0 to 2 percent slopes, is moderately slow. Available water capacity is very high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is subject to rare periods of flooding following convective storms in summer.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Calabasas soil, 2 to 4 percent slopes, is characterized mainly by western wheatgrass, blue grama, galleta, and sideoats grama. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are black grama and fourwing saltbush. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, sideoats grama, and black grama decrease and there is an increase in plants such as blue grama, galleta, threeawn, broom snakeweed, and walkingstick cholla.

The potential natural plant community on the Calabasas soil, 0 to 2 percent slopes, is characterized mainly by western wheatgrass, vine-mesquite, alkali sacaton, and galleta. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are blue grama and fourwing saltbush. The average annual production of air-dry vegetation ranges from 2,000 pounds per acre in favorable years to 900 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, vine-mesquite, and alkali sacaton decrease and there is an increase in plants such as blue grama, galleta, and mat muhly.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grubbing, stacking and burning cholla are acceptible brush control practices on this unit when accompanied by deferment from grazing. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass, sideoats grama, and alkali sacaton.

805—Tanbark-Rayohill complex, 1 to 5 percent slopes. This map unit is on knolls and pediments that have karst topography. Areas are irregular in shape and are 150 to 4,000 acres in size. The present vegetation is grass and scattered junipers. Elevation is 5,600 to 6,300 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 52 to 56 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 45 percent Tanbark silt loam and 30 percent Rayohill loam. Both soils are throughout the unit.

Included in this unit are small areas of Puice soils on knoll tops, Netoma soils and soils that are similar to the Rayohill soil but have finer texture throughout the profile and are on knolls, and Alicia and La Fonda soils in swales and sinkholes. Included areas make up about 25 percent of the total acreage.

The Tanbark soil is shallow and well drained. It formed in alluvium derived dominantly from gypsum. Typically, the surface layer is light brown silt loam about 1 inch thick. The underlying material is white loam about 11 inches thick, the next layer is weathered gypsum about 4 inches thick. Hard gypsum is at a depth of 16 inches.

Permeability of the Tanbark soil is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high. This soil is slightly saline.

The Rayohill soil is moderately deep and well drained. It formed in alluvium derived dominantly from gypsum and siltstone. Typically, the surface layer is light brown loam about 1 inch thick. The upper 22 inches of the underlying material is white and pink silt loam, and the lower part to a depth of 26 inches is pink sandy loam. Soft gypsiferous siltstone is at a depth of 26 inches. Hard gypsum commonly underlies the weathered bedrock. This soil is slightly saline.

Permeability of the Rayohill soil is moderate. Available water capacity is very low. Effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, bush muhly, alkali sacaton, gyp dropseed, and coldenia. Scattered oneseed juniper is present in some areas. The average annual production of air-dry vegetation ranges from 750 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, black grama, bush muhly, and alkali sacaton decrease and there is an increase in plants such as gyp dropseed, coldenia, banana yucca, and Bigelow sagebrush.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama and alkali sacaton.

812—Socorro very gravelly loam, 1 to 8 percent slopes. This moderately deep, well drained soil is on basalt lava flows. It formed in alluvium derived from basalt and calcareous loess. Areas are irregular in shape and are 2,500 to 5,000 acres in size. The present vegetation is grass and walkingstick cholla. Elevation is 5,400 to 6,300 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 54 to 57 degrees F, and the average frost-free period is 150 to 180 days.

Typically, the surface layer is grayish brown very gravelly loam about 3 inches thick. The upper 7 inches of the subsoil is brown very cobbly loam, and the lower 18 inches is very pale brown extremely stony loam. Basalt is at a depth of 28 inches.

Included in this unit are small areas of Socorro soils that have slopes of more than 8 percent, soils that are similar to this Socorro soil but have a darker colored surface layer, soils that are similar to this Socorro soil but are shallow, Ildecarb soils throughout the unit, soils that are similar to this Socorro soil but are finer textured and are in swales and depressional areas, and basalt Rock outcrop on knolls and cinder cones. Included areas make up about 25 percent of the total acreage in this unit.

Permeability of this Socorro soil is moderate. Available water capacity is very low. Effective rooting depth is 20 to 40 inches. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used for livestock grazing, wildlife habitat, and gravel production from its two cinder cones.

The potential natural plant community on this unit is characterized by western wheatgrass, black grama, blue grama, sideoats grama, and New Mexico feathergrass. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are galleta and winterfat. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 500 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, black grama, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as blue grama, galleta, threeawn, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass, black grama, and sideoats grama.

814—Puice-Tanbark-Harvey association, 1 to 25 percent slopes. This map unit is on hills, knolls, fan terraces, and ridges. Areas are irregular in shape and are 100 to 6,000 acres in size. The present vegetation is dominantly grass with some pinyon and juniper on north aspects. Elevation is 5,700 to 6,500 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 56 degrees F, and the average frost-free period is 150 to 170 days.

This unit 40 percent Puice channery loam, 1 to 15 percent slopes, 20 percent Tanbark silt loam, 2 to 25 percent slopes, and 20 percent Harvey loam, 1 to 6 percent slopes. The Puice soil is on the tops and sides of knolls and ridges, the Tanbark soil is on hillslopes, knolls, and ridges, and the Harvey soil is on fan terraces and in swales.

Included in this unit are small areas of Puice soils that have a flaggy surface layer; Puice soils that have slopes of more than 15 percent; Cuate soils, Pinon soils, and soils that are similar to Pinon soils but are less than 4 inches deep and are near Puice soils; soils that are similar to the Tanbark soil but are moderately deep; Dean and Ildecarb soils on fan terraces; and limestone Rock outcrop. Included areas make up about 20 percent of the total acreage.

The Puice soil is moderately deep and well drained. It formed in alluvium derived dominantly from interbedded limestone and gypsum. Typically, the surface layer is brown channery loam and pale brown gravelly loam about 6 inches thick. The upper 17 inches of the subsoil is white and light gray very channery loam, and the lower 5 inches is very pale brown extremely channery loam. Limestone and gypsum are at a depth of 28 inches.

Permeability of the Puice soil is moderate. Effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Tanbark soil is shallow and well drained. It formed in alluvium derived dominantly from gypsum. Typically, the surface layer is pale brown silt loam about 2 inches thick. The underlying material is very pale brown silt loam about 11 inches thick. Weathered gypsum is at a depth of 13 inches.

Permeability of the Tanbark soil is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is high. Hard unweathered gypsum underlies the weathered bedrock at a depth above 30 inches.

The Harvey soil is deep and well drained. It formed in alluvium derived dominantly from eolian material and limestone. Typically, the surface layer is brown loam about 3 inches thick. The upper 8 inches of the subsoil is brown loam, and the lower 30 inches is pink clay loam. The substratum to a depth of 60 inches or more is light brown clay loam.

Permeability of the Harvey soil is moderate. Available water capacity is high. Effective rooting depth is to a depth of 60 inches or more or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Puice soil is characterized mainly by black grama, New Mexico feathergrass, blue grama, sideoats grama, and winterfat. The average annual production of air-dry vegetation ranges from 1,100 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, and sideoats grama decrease and there is an increase in plants such as blue grama, threeawn, wolftail, and oneseed juniper.

The potential natural plant community on the Tanbark soil is characterized mainly by black grama, alkali sacaton, gyp dropseed, coldenia, and Mormon-tea. The average annual production of air-dry vegetation ranges from 750 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, black grama and alkali sacaton decrease and there is an increase in plants such as gyp dropseed, coldenia, Mormon-tea, and Bigelow sagebrush.

The potential natural plant community on the Harvey soil is characterized mainly by black grama, New Mexico feathergrass, blue grama, western wheatgrass, and winterfat. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, western wheatgrass, and winterfat decrease and there is an increase in plants such as blue grama, galleta, threeawn, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and the cool season species such as New Mexico feathergrass.

816—Pirodel-Harvey-Pinon complex, 1 to 15 percent slopes. This map is on fan terraces and adjacent knolls. Areas are irregular in shape and are 100 to 5,000 acres in size. The present vegetation is pinyon and juniper and grass. Elevation is 5,600 to 6,700 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 30 percent Pirodel fine sand, 1 to 15 percent slopes, 25 percent Harvey fine sandy loam, 1 to 15 percent slopes, and 20 percent Pinon channery fine sandy loam, 1 to 15 percent slopes. The Pirodel soil is on the lower fan terraces, the Harvey soil is on the upper fan terraces, and the Pinon soil is on the knolls.

Included in this unit are small areas of Mespun and Palma soils in swales, soils that are similar to the Pirodel and Pinon soils but are moderately deep, and Gabaldon soils in depressional areas. Included areas make up about 25 percent of the total acreage.

The Pirodel soil is deep and well drained. It formed in alluvium derived dominantly from eolian material and limestone. Typically, the surface layer is brown fine sand about 3 inches thick. The upper 11 inches of the subsoil is brown loamy fine sand, and the lower 16 inches is brown and pale brown loamy fine sand. Below this is a buried subsoil of very pale brown gravelly sandy clay loam that extends to a depth of 60 inches or more.

Permeability of the Pirodel soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is very high.

The Harvey soil is deep and well drained. It formed in alluvium derived dominantly from limestone and eolian material. Typically, the surface layer is dark yellowish brown fine sandy loam about 3 inches thick. The upper 9 inches of the subsoil is dark yellowish brown fine sandy loam, and the lower 19 inches is light brown and pinkish gray sandy clay loam. The substratum to a depth of 60 inches or more is light brown gravelly sandy clay loam.

Permeability of the Harvey soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

The Pinon soil is shallow and well drained. It formed in alluvium derived dominantly from limestone and eolian material. Typically, the surface layer is dark brown channery fine sandy loam about 3 inches thick. The upper part of the subsoil is brown channery loam about 9 inches thick, and the lower part is light gray channery loam about 6 inches thick. Limestone is at a depth of 18 inches.

Permeability of the Pinon soil is moderately slow. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Pirodel soil is characterized mainly by blue grama, little bluestem, Indian ricegrass, and sand bluestem. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are dropseed and sand sagebrush. The average annual production of air-dry vegetation ranges from 1,800 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, little bluestem, Indian ricegrass, and sand bluestem decrease and there is an increase in plants such as blue grama, dropseed, and sand sagebrush. Pinyon and oneseed juniper may invade. Severe deterioration of the potential natural plant community may result in nearly total domination by pinyon, oneseed juniper, and sand sagebrush.

The potential natural plant community on the Harvey soil is characterized mainly by black grama, New Mexico feathergrass, sand bluestem, Indian ricegrass, and galleta. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are little bluestem and sideoats grama. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, needleandthread, winterfat, sideoats grama, and little bluestem decrease and there is an increase in plants such as blue grama, sand dropseed, spike dropseed, sand sagebrush, pinyon, and oneseed juniper.

The potential natural plant community on the Pinon soil is characterized mainly by little bluestem, sideoats grama, blue grama, New Mexico feathergrass, pinyon, and oneseed juniper. The average annual production of air-dry vegetation ranges from 1,400 pounds per acre in favorable years to 700 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as blue grama, sand dropseed, pinyon, and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Brush management is an acceptable practice on the Pirodel and Harvey soils when accompanied by deferment from grazing. Fencing and pipelines for providing water for livestock on the Pinon soil are difficult to install because of the shallow depth to limestone. Grazing management should be designed to increase the productivity and reproduction of the cool season grasses, black grama, sideoats grama, and little bluestem.

Where trees have become established, the unit is well suited to the production of wood products such as fuelwood, fenceposts, christmas trees, pinyon nuts, and ornamentals.

The site index for pinyon and oneseed juniper is 75 to 150 on the Pirodel soil, 20 to 59 on the Harvey soil, and 41 to 125 on the Pinon soil. The potential production is 9 to 20 cords per acre on the Pirodel soil, 3 to 10 cords per acre on the Harvey soil, and 5 to 18 cords per acre on the Pinon soil. It applies to a stand of trees that average 5 inches in diameter at a height of 1 foot. Woodland management is limited on the Pirodel and Harvey soils because of the fine sandy loam texture of the surface layer, which limits trafficability. The hazard of windthrow is high on the Pinon soil.

Precautions should be taken to control erosion by wind and water during woodland management activities on the Pirodel and Harvey soils because of the erodibility of the sandy surface layer.

The production of the understory vegetation varies with the percentage of the tree canopy and with the exposure. The production of understory vegetation is greatest in open areas that have a southerly exposure. The lowest production can be expected in areas that are under a dense canopy cover and have a northerly exposure. Maximum understory production can be obtained by selectively thinning and reducing the density of the canopy to a desirable level.

818—Mespun fine sand, 1 to 6 percent slopes. This deep and excessively drained soil is in swales and on plains. It formed in eolian sand deposits. Areas are irregular in shape and are 100 to 1,500 acres in size. The present vegetation is grass and junipers. Elevation is 5,600 to 6,500 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 150 to 170 days.

The Mespun soil is deep and excessively drained. It formed in eolian sand derived from mixed sources. Typically, the surface layer is brown fine sand about 11 inches thick. The underlying material is strong brown fine sand to a depth of 60 inches.

Included in this unit are small areas of Palma, Pirodel, and Penistaja soils throughout the unit. Included areas make up about 25 percent of the total acreage.

Permeability of this Mespun soil is rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by sand bluestem, Indian ricegrass, little bluestem, and giant dropseed. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are blue grama, sand dropseed, and sand sagebrush. The average annual production of air-dry vegetation ranges from 1,800 pounds per acre in favorable years to 450 pounds in unfavorable years. If the plant community deteriorates, sand bluestem, Indian ricegrass, and little bluestem decrease and there is an increase in plants such as blue grama, dropseeds, and sand sagebrush. Oneseed juniper may invade.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Brush management is an acceptable practice on the Mespun soil when accompanied by deferment from grazing. Grazing management should be designed to increase the productivity and reproduction of sand bluestem, little bluestem, and Indian ricegrass.

822—Pirodel fine sand, 1 to 7 percent slopes. This deep, well drained soil is on plains. It formed in eolian sediment. Areas are irregular in shape and are 200 to 4,750 acres in size. The present vegetation is grass and scattered trees. Elevation is 5,300 to 6,000 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 53 to 57 degrees F, and the average frost-free period is 150 to 180 days.

Typically, the surface layer is light brown fine sand about 2 inches thick. The subsoil is brown fine sand about 27 inches thick. Below this to a depth of 60 inches or more is a buried subsoil of pink gravelly sandy loam, gravelly loam, and sandy loam.

Included in this unit are small areas of Clovis soils in depressional areas between hills and remnants of the former landscape and small areas of Mespun soils on the northeast sides of hills. Included areas make up about 25 percent of the total acreage.

Permeability of this Pirodel soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, Indian ricegrass, New Mexico feathergrass, blue grama, and sand dropseed. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are little bluestem and sand sagebrush. The average annual production of air-dry vegetation ranges from 1,250 pounds per acre in favorable years to 250 pounds in unfavorable years. If the plant community deteriorates, black grama, Indian ricegrass, New Mexico feathergrass, and little bluestem decrease and there is an increase in plants such as sand dropseed, spike dropseed, blue grama, and sand sagebrush. Oneseed juniper may invade.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Chemical control of sand sagebrush is an acceptable practice on the Pirodel soil if it is accompanied by deferment from grazing. Grazing management should be designed to increase the productivity and reproduction of black grama, Indian ricegrass, and New Mexico feathergrass.

824—Pinon very channery fine sandy loam, 1 to 30 percent slopes. This shallow, well drained soil is on cuestas, ridges, and hillslopes. It formed in alluvium derived dominantly from limestone and eolian material. Areas are irregular in shape and are 100 to 1,500 acres in size. The present vegetation is pinyon and juniper and grass. Elevation is 6,000 to 6,700 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 150 to 170 days.

Typically, the surface layer is dark brown very channery fine sandy loam about 2 inches thick. The upper 7 inches of the subsoil is dark brown channery loam, and the lower 8 inches is pale brown channery loam. Limestone is at a depth of 17 inches.

Included in this unit are small areas of Winona soils, soils that have a dark-colored surface layer, Puice soils, and limestone Rock outcrop. Included areas make up about 25 percent of the total acreage.

Permeability of this soil is moderately slow. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by curlyleaf muhly, black grama, sideoats grama, New Mexico feathergrass, and little bluestem. Other important plants that are present in amounts smaller than those characterizing the potential natural plant community are blue grama, pinyon, and oneseed juniper. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, curlyleaf muhly, black grama, sideoats grama, New Mexico feathergrass, and little bluestem decrease and there is an increase in plants such as blue grama, wolftail, pinyon, and oneseed juniper.

This unit has limited suitability for rangeland management practices such as fencing and installing pipelines for providing water for livestock because of the shallow depth to limestone, slope, and areas of Rock outcrop. Grazing management should be designed to increase the productivity and reproduction of New Mexico feathergrass, black grama, and sideoats grama.

Where trees are established, the site index for pinyon and oneseed juniper ranges from 63 to 100. This unit can produce 8 to 14 cords of wood per acre in a stand of trees that average 5 inches in diameter at a height of 1 foot. Where slopes are more than 15 percent, woodland management for production of firewood and fenceposts is limited by the very channery surface and by the areas of Rock outcrop.

826—Harvey-Ildecarb-Pinon complex, 2 to 10 percent slopes. This map unit is on ridges and knolls and on adjacent fan terraces. Areas are irregular in shape and are 100 to 3,500 acres in size. The present vegetation is grass with a few scattered trees. Elevation is 6,200 to 6,700 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 30 percent Harvey fine sandy loam, 25 percent Ildecarb channery loam, and 20 percent Pinon channery sandy loam. The Harvey soil is on fan terraces below ridges and knolls, the Ildecarb soil is on knolls and fan terraces below knolls and ridges, and the Pinon soil is on crests of ridges and knolls.

Included in this unit are small areas of soils that are similar to the Harvey soil but are gravelly; soils that have slopes of more than 10 percent; and Puice, La Fonda, and Dean soils and limestone Rock outcrop throughout the unit. Included areas make up about 25 percent of the total acreage.

The Harvey soil is deep and well drained. It formed in alluvium. Typically, the surface layer is brown fine sandy loam about 2 inches thick. The subsoil is yellowish brown and light yellowish brown loam about 13 inches thick. The upper 17 inches of the substratum is pink loam, and the lower part to a depth of 60 inches or more is light brown sandy clay loam and loam.

Permeability of the Harvey soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

The Ildecarb soil is deep and well drained. It formed in alluvium derived dominantly from limestone and gypsum. Typically, the surface layer is brown channery loam about 13 inches thick. The upper 23 inches of the underlying material is pink very channery loam and extremely channery loam, and the lower part to a depth of 60 inches or more is pink extremely channery loam.

Permeability of the Ildecarb soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Pinon soil is very shallow and shallow and is well drained. It formed in alluvium derived dominantly from limestone. Typically, the surface layer is pale brown channery sandy loam about 3 inches thick. The upper 4 inches of the underlying material is brown channery sandy loam, and the lower 9 inches is pinkish white channery loam. Limestone is at a depth of 16 inches.

Permeability of the Pinon soil is moderately slow. Available water capacity is very low. Effective rooting depth is 7 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Harvey soil is characterized mainly by black grama, New Mexico feathergrass, blue grama, and winterfat. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are sideoats grama and galleta. The average annual production of air-dry vegetation ranges from 1,500 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, and sideoats grama decrease and there is an increase in plants such as blue grama, galleta, sand dropseed, threeawn, and Bigelow sagebrush.

The potential natural plant community on the Ildecarb soil is characterized mainly by black grama, New Mexico feathergrass, sideoats grama, blue grama, and winterfat. The average annual production of air-dry vegetation ranges from 1,100 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, and sideoats grama decrease and there is an increase in plants such as blue grama, galleta, threeawn, and broom snakeweed.

The potential natural plant community on the Pinon soil is characterized mainly by curlyleaf muhly, New Mexico feathergrass, sideoats grama, black grama, and blue grama. The average annual production of air-dry vegetation ranges from 1,400 pounds per acre in favorable years to 700 pounds in unfavorable years. If the plant community deteriorates, curlyleaf muhly, New Mexico feathergrass, and sideoats grama decrease and there is an increase in plants such as blue grama, threeawn, sand dropseed, and broom snakeweed.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. The Pinon soil has limited suitability for rangeland management practices such as installing pipelines for providing water for livestock because of the very shallow and shallow depth to limestone. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and New Mexico feathergrass.

828—Cuate-Tanbark complex, 2 to 15 percent slopes. This map unit is on knolls and pediments. Areas are irregular in shape and are 250 to 7,500 acres in size. The present vegetation is trees and grass. Elevation is 6,100 to 6,700 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost- free period is 150 to 170 days.

This unit is 40 percent Cuate very channery loam, 2 to 20 percent slopes, and 30 percent Tanbark silt loam, 5 to 10 percent slopes. The Cuate soil is on the tops and upper side slopes of knolls, and the Tanbark soil is on pediments at the base of knolls.

Included in this unit are small areas of Cuate soils that have slopes of more than 20 percent, Rayohill soils on hillslopes, Harvey and Netoma soils on fan terraces, and Gabaldon soils in depressional areas and sinkholes. Included areas make up about 30 percent of the total acreage.

The Cuate soil is moderately deep and well drained. It formed in colluvium derived dominantly from limestone. Typically, the surface layer is dark brown very channery loam about 1 inch thick. The subsoil is dark brown and pale brown very channery loam about 22 inches thick. The substratum is white very channery sandy loam about 9 inches thick. Limestone is at a depth of 32 inches.

Permeability of the Cuate soil is moderate. Available water capacity is very low. Effective rooting depth is 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

The Tanbark soil is shallow and well drained. It formed in alluvium derived dominantly from gypsum and limestone. Typically, the surface layer is brown silt loam about 6 inches thick. The underlying material is white silt loam about 9 inches thick. Hard gypsum is at a depth of 15 inches.

Permeability of the Tanbark soil is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Cuate soil is characterized mainly by black grama, New Mexico feathergrass, sideoats grama, blue grama, and winterfat. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are galleta, wolftail, and oneseed juniper. The average annual production of air-dry vegetation ranges from 1,100 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, sideoats grama, and winterfat decrease and there is an increase in plants such as blue grama, galleta, wolftail, and oneseed juniper.

The potential natural plant community on the Tanbark soil is characterized mainly by black grama, alkali sacaton, gyp dropseed, winterfat, and oneseed juniper. The average annual production of air-dry vegetation ranges from 750 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, black grama, alkali sacaton, and winterfat decrease and there is an increase in plants such as gyp dropseed, banana yucca, Bigelow sagebrush, and oneseed juniper.

The Cuate soil is suited to such management practices as fencing, and pipelines for providing water for livestock. Grazing management should be designed to increase the productivity and reproduction of New Mexico feathergrass and sideoats grama.

The Tanbark soil is not suited to most rangeland management practices because of the shallow soil depth. Grazing management should be designed to increase the productivity and reproduction of black grama and alkali sacaton.

Where the Cuate soil is on north-facing slopes, it has fair potential for the production of products such as fuelwood, fenceposts, and ornamentals. The site index for pinyon and juniper ranges from 66 to 74. This unit can produce 8 to 9 cords of wood per acre in a stand of trees that average 5 inches in diameter at a height of 1 foot. Woodland management for fuelwood and fenceposts is limited because of the channery surface layer.

The understory vegetation varies with the percentage of the tree canopy and with the exposure. The greatest production of understory vegetation is in open areas that have a southerly exposure. The lowest production can be expected in areas that are under a dense canopy cover and have a northerly exposure. Maximum understory production can be obtained by selectively thinning and reducing canopy density to a desirable level.

830—Cuate-Deama-Tanbark complex, 15 to 60 percent slopes. This map unit is in canyons, on ridges, and on hills. Areas are irregular in shape and are 100 to 3,000 acres in size. The present vegetation is pinyon and juniper and grass. Elevation is 6,200 to 6,800 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 25 percent Cuate very channery loam, 15 to 60 percent slopes, 25 percent Deama very channery loam, 15 to 60 percent slopes, and 20 percent Tanbark channery loam, 15 to 60 percent slopes. The Cuate soil is on hills, the Deama soil is on canyons and ridges, and the Tanbark soil generally is on south-facing slopes.

Included in this unit are small areas of soils that are similar to the Cuate and Deama soils but do not have a dark-colored surface layer or are underlain by soft gypsiferous siltstone, Harvey and Ildecarb soils on short alluvial fans, limestone and gypsum Rock outcrop that has slopes of less than 10 percent, and a soil that is similar to the Deama soil but does not have a layer of calcium carbonate accumulation. The included areas are throughout the unit. Included areas make up about 30 percent of the total acreage.

The Cuate soil is moderately deep and well drained. It formed in alluvium and colluvium derived dominantly from limestone. Typically, the surface layer is dark brown and brown very channery loam about 8 inches thick. The upper 14 inches of the subsoil is pinkish gray very flaggy loam, and the lower 11 inches is pinkish gray very gravelly loam. Limestone is at a depth of 33 inches.

Permeability of the Cuate soil is moderate. Available water capacity is very low. Effective rooting depth is 20 to 40 inches. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is moderate.

The Deama soil is shallow and well drained. It formed in alluvium derived dominantly from limestone. Typically, the surface layer is brown very channery loam about 7 inches thick. The upper 3 inches of the subsoil is pale brown very channery loam, and the lower 8 inches is light gray very channery loam. Limestone is at a depth of 18 inches.

Permeability of the Deama soil is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is moderate.

The Tanbark soil is shallow and well drained. It formed in alluvium derived dominantly from gypsum. Typically, the surface layer is pale brown channery loam about 2 inches thick. The underlying material is white gypsiferous silt loam about 10 inches thick. Hard gypsum is at a depth of 12 inches.

Permeability of the Tanbark soil is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Cuate and Deama soils varies depending on the aspect. Areas on south-facing slopes support a plant community consisting of black grama, sideoats grama, curlyleaf muhly, and New Mexico feathergrass. Oneseed juniper is present. Where the Cuate and Deama soils are on the north-facing slopes, the potential natural plant community is characterized mainly by pinyon, oneseed juniper, sideoats grama, little bluestem, and New Mexico feathergrass. The average annual production of air-dry vegetation ranges from 1,800 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, little bluestem, and New Mexico feathergrass decrease and there is an increase in plants such as blue grama, galleta, pinyon, and oneseed juniper.

The potential natural plant community on the Tanbark soil is characterized mainly by black grama, alkali sacaton, gyp dropseed, and oneseed juniper. The average annual production of air-dry vegetation ranges from 750 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, black grama and alkali sacaton decrease and there is an increase in plants such as gyp dropseed, coldenia, oneseed juniper, and pinyon.

The Tanbark and Deama soils are not suited to management practices such as fencing because of slope and very shallow and shallow depth to bedrock. Grazing management should be designed to increase the productivity and reproduction of black grama, New Mexico feathergrass, alkali sacaton, and sideoats grama.

The Cuate soil is suited to such management practices as fencing, installing pipelines for providing water for livestock, and rock and brush dams. Grazing management should be designed to increase the productivity and reproduction of black grama, New Mexico feathergrass, and sideoats grama.

Where the Deama and Cuate soils are on the north-facing slopes, the site index for pinyon and juniper ranges from 66 to 74 on the Cuate soil and from 65 to 72 on the Deama soil. These soils can produce 8 to 9 cords of wood per acre in a stand of trees that averages 5 inches in diameter at a height of 1 foot. Woodland management for fuelwood and fenceposts is limited because of the steepness of slope and the channery and very channery texture of the surface layer. When harvesting wood products, care must be taken to reduce the risk of erosion.

832—Jornaham cobbly fine sandy loam, 2 to 10 percent slopes. This deep, well drained soil is on knolls, fan terraces, and ridges. It formed in alluvium derived dominantly from limestone and gypsum. Areas are irregular in shape and are 150 to 2,000 acres in size. The present vegetation is grass with scattered trees. Elevation is 5,700 to 6,300 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 53 to 57 degrees F, and the average frost-free period is 150 to 180 days.

Typically, the surface layer is yellowish brown cobbly fine sandy loam about 2 inches thick. The upper 7 inches of the underlying material is yellowish brown cobbly sandy loam, the next 25 inches is very pale brown and pink gravelly loam and gravelly fine sandy loam, and the lower part to a depth of 60 inches or more is pink, gypsiferous gravelly loam and gravelly fine sandy loam.

Included in this unit are small areas of Netoma soils on hills and fan terraces, Winona soils on ridge crests, and La Fonda soils on alluvial fans and in drainageways. Included areas make up about 30 percent of the total acreage.

Permeability of this Jornaham soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by black grama, New Mexico feathergrass, blue grama, sideoats grama, and winterfat. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are galleta and oneseed juniper. The average annual production of air-dry vegetation ranges from 1,100 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, New Mexico feathergrass, sideoats grama, and winterfat decrease and there is an increase in plants such as blue grama, galleta, broom snakeweed, and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, livestock watering facilities, and fencing. Grazing management should be designed to increase the productivity and reproduction of black grama, New Mexico feathergrass, and sideoats grama.

834—San Mateo-Glenberg complex, 0 to 2 percent slopes. This map unit is in drainageways. Areas are elongated in shape and are 300 to 1,000 acres in size. The present vegetation is grass. Elevation is 5,200 to 6,100 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 53 to 57 degrees F, and the average frost-free period is 150 to 180 days.

This unit is 50 percent San Mateo loam, 0 to 2 percent slopes, and 30 percent Glenberg fine sandy loam, 0 to 2 percent slopes. The San Mateo soil is on the central part of lower positions in drainageways, and the Glenberg soil is on the higher positions in drainageways.

Included in this unit are small areas of La Fonda soils on alluvial fans extending into the drainageways and Gabaldon soils in depressional areas. Included areas make up about 20 percent of the total acreage.

The San Mateo soil is deep and well drained. It formed in alluvium derived from sandstone and limestone. Typically, the surface layer is pale brown loam about 2 inches thick. The upper 34 inches of the underlying material is pale brown loam and clay loam, and the lower part to a depth of 60 inches or more is yellowish brown clay loam.

Permeability of the San Mateo soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is subject to frequent periods of flooding during prolonged high-intensity thunderstorms in summer.

The Glenberg soil is deep and well drained. It formed in recent alluvium. Typically, the surface layer is light brownish gray fine sandy loam about 3 inches thick. The underlying material to a depth of 60 inches or more is pale brown fine sandy loam.

Permeability of the Glenberg soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. This soil is subject to frequent periods of flooding during high-intensity storms.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by western wheatgrass, vine-mesquite, alkali sacaton, galleta, and fourwing saltbush. The average annual production of air-dry vegetation ranges from 3,000 pounds per acre in favorable years to 900 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass, vine-mesquite, and alkali sacaton decrease and there is an increase in plants such as blue grama, mat muhly, and galleta. Deterioration of the vegetation on this unit commonly results in the formation of gullies that drain the site and reduce production of vegetation.

This unit is suited to such management practices as fencing, livestock watering facilities, and installing erosion control and grade stabilization structures. Grazing management should be designed to increase the productivity and reproduction of western wheatgrass, vine-mesquite, and alkali sacaton.

836—Rayohill-Clovis fine sandy loams, 1 to 6 percent slopes. This map unit is on fan terraces and knolls. Areas are irregular in shape and are 200 to 3,000 acres in size. The present vegetation is grass, oneseed juniper, and shrubs. Elevation is 5,800 to 6,300 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 54 to 57 degrees F, and the average frost-free period is 160 to 180 days.

This unit is 55 percent Rayohill fine sandy loam and 20 percent Clovis fine sandy loam. The Rayohill soil is on knolls and upper fan terraces, and the Clovis soil is on the lower part of fan terraces.

Included in this unit are small areas of Tanbark, Penistaja, Clovis, Harvey, Netoma, and Jornaham soils; a soil that is similar to the Rayohill soil but has less clay in the subsoil; and a soil that is similar to the Clovis soil but has a buried gypsiferous soil between depths of 20 and 40 inches. The included areas are throughout the unit. Included areas make up about 25 percent of the total acreage.

The Rayohill soil is moderately deep and well drained. It formed in alluvium derived dominantly from gypsum. Typically, the surface layer is brown fine sandy loam about 1 inch thick. The upper 12 inches of the underlying material is white silt loam, the next 12 inches is pink loam, and the lower part to a depth of 33 inches is reddish yellow fine sandy loam. Weathered gypsum is at a depth of 33 inches.

Permeability of the Rayohill soil is moderate. Available water capacity is very low. Effective rooting depth is 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high. This soil is slightly saline.

The Clovis soil is deep and well drained. It formed in alluvial and eolian material derived from mixed sources. Typically, the surface layer is brown fine sandy loam about 2 inches thick. The upper 10 inches of the subsoil is brown sandy clay loam, and the lower 17 inches is pink and pinkish white sandy clay loam. The substratum to a depth of 60 inches or more is reddish yellow sandy loam.

Permeability of the Clovis soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Rayohill soil is characterized mainly by black grama, alkali sacaton, galleta, gyp dropseed, and fourwing saltbush. Other important plants present on this unit in smaller amounts than those characterizing the potential natural plant community are coldenia and oneseed juniper. The average annual production of air-dry vegetation ranges from 750 pounds per acre in favorable years to 300 pounds in unfavorable years. If the plant community deteriorates, black grama, alkali sacaton, and galleta decrease and there is an increase in plants such as gyp dropseed, Bigelow sagebrush, coldenia, algerita, and oneseed juniper.

The potential natural plant community on the Clovis soil is characterized mainly by blue grama, western wheatgrass, galleta, and sideoats grama. The average annual production of air-dry vegetation ranges from 1,400 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, western wheatgrass and sideoats grama decrease and there is an increase in plants such as blue grama, galleta, broom snakeweed, and walkingstick cholla. Oneseed juniper may invade.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and livestock watering facilities. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and western wheatgrass.

838—Tanbark-Rock outcrop complex, 35 to 80 percent slopes. This map unit is on mesa escarpments. Areas are irregular in shape and are 300 to 1,250 acres in size. The present vegetation is grass. Elevation is 6,200 to 7,200 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 50 percent Tanbark fine sandy loam, 35 to 80 percent slopes, and 25 percent Rock outcrop. The Tanbark soil is on mesa escarpments, and Rock outcrop occurs as ledges on the escarpments.

Included in this unit are small areas of Gypsum land on escarpment side slopes, Glenberg soils, a soil that is more than 35 percent rock fragments and is in drainageways, and a shallow to deep soil that is more than 35 percent rock fragments and is on talus side slopes at the base of escarpments. Included areas make up about 25 percent of the total acreage.

The Tanbark soil is shallow and well drained. It formed in alluvium derived dominantly from limestone and gypsum. Typically, the surface layer is light yellowish brown fine sandy loam about 2 inches thick. The upper 6 inches of the underlying material is very pale brown silt loam, and the lower 6 inches is white silt loam. Gypsum is at a depth of 14 inches.

Permeability of the Tanbark soil is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is high.

Rock outcrop is gypsum, limestone, and sandstone. There is little if any vegetation in these areas. Surface runoff is rapid.

This unit is mainly used as wildlife habitat. It generally is not suited to grazing use because of slope, poor accessibility, and insufficient forage.

840—Deama-Rock outcrop complex, 3 to 40 percent slopes. This map unit is on ridges, knolls, and hills. Areas are irregular in shape and are 200 to 6,000 acres in size. The present vegetation is grass and trees. Elevation is 5,500 to 7,100 feet. The average annual precipitation is about 12 to 15 inches, the average annual air temperature is 50 to 54 degrees F, and the average frost-free period is 150 to 170 days.

This unit is 45 percent Deama very stony loam, 3 to 40 percent slopes, and 25 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of Cuate soils that have slopes of more than 20 percent, Pinon soils, a soil that is similar to the Deama soil but does not have a high content of calcium carbonate and is on south-facing slopes, Gabaldon soils in drainageways, and soils that are shallow over indurated caliche and are throughout the unit. Included areas make up about 30 percent of the total acreage.

The Deama soil is very shallow and shallow and is well drained. It formed in local alluvium derived dominantly from limestone. Typically, the surface layer is dark brown very stony loam about 1 inch thick. The upper 8 inches of the subsoil is dark brown very flaggy loam, and the lower 10 inches is pale brown very flaggy loam. Limestone is at a depth of 19 inches.

Permeability of the Deama soil is moderate. Available water capacity is very low. Effective rooting depth is 8 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

Rock outcrop is limestone. There is little if any vegetation in these areas. Runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community in areas where the Deama soil has slopes of from 3 to 15 percent is characterized mainly by curlyleaf muhly, sideoats grama, black grama, New Mexico feathergrass, and blue grama. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are scattered oneseed juniper and mountainmahogany. The average annual production of air-dry vegetation ranges from 1,400 pounds per acre in favorable years to 700 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, black grama, and New Mexico feathergrass decrease and there is an increase in plants such as blue grama, sand dropseed, threeawn, and broom snakeweed.

The potential natural plant community in areas where the Deama soil has slopes of 15 to 30 percent is characterized mainly by black grama, sideoats grama, curlyleaf muhly, plains lovegrass, and New Mexico feathergrass. Scattered pinyon and juniper may be present in varying amounts. The average annual production of air-dry vegetation ranges from 1,200 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as blue grama, curlyleaf muhly, algerita, pinyon, and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, and livestock watering facilities. Fencing and installing pipelines for providing water for livestock are difficult because of the very shallow and shallow depth. Grazing management should be designed to increase the productivity and reproduction of black grama, sideoats grama, and New Mexico feathergrass.

845—Winona-Rock outcrop complex, 5 to 45 percent slopes. This map unit is on cuestas and hills. Areas are irregular in shape and are 150 to 3,000 acres in size. The present vegetation is grass and scattered trees. Elevation is 5,500 to 6,500 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 53 to 57 degrees F, and the average frost-free period is 160 to 180 days.

This unit is 50 percent Winona very flaggy loam, 5 to 45 percent slopes, and 20 percent Rock outcrop that is present as exposed bedding planes, ledges, and small cliffs. The components of this unit are intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are small areas of soils that are similar to the Winona soil but have a surface layer of very channery loam, stony loam, or very stony sandy loam and are throughout the unit; Deama soils above an elevation of 6,000 feet; Tanbark soils near areas of gypsum Rock outcrop; Pinon soils in areas adjacent to Chupadera Arroyo; a soil that is similar to the Puice soils but is less than 35 percent rock fragments and is between the Valencia County line and the Rayo Hills; Puice and Ildecarb soils on toe slopes of hills and cuestas; and Lozier soils on south- and southwest-facing hillslopes below an elevation of 6,000 feet. Included areas make up about 30 percent of the total acreage.

The Winona soil is very shallow and shallow and is well drained. It formed in alluvium derived dominantly from limestone. Typically, the surface layer is brown very flaggy loam about 2 inches thick. The upper 9 inches of the underlying material is pale brown very flaggy loam, and the lower 4 inches is very pale brown very channery loam. Limestone is at depth of 15 inches.

Permeability of the Winona soil is moderate. Available water capacity is very low. Effective rooting depth is 7 to 20 inches. Runoff is rapid, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

Rock outcrop consists of exposed areas of limestone and sandstone. There is little if any vegetation in these areas. Surface runoff is rapid.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on this unit is characterized by curlyleaf muhly, New Mexico feathergrass, black grama, and sideoats grama. Mariola and ocotillo are present in the warmer areas of this unit and on southerly exposures. The average annual production of air-dry vegetation range from 1,200 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, New Mexico feathergrass, black grama, and sideoats grama decrease and there is an increase in plants such as slim tridens, hairy tridens, threeawn, fluffgrass, and banana yucca.

This unit is suited to such management practices as proper grazing use, planned grazing systems, and livestock watering facilities. Installing pipelines for providing water for livestock and fencing are difficult because of slope and the shallow depth to limestone. Grazing management should be designed to increase the productivity and reproduction of New Mexico feathergrass, black grama, and sideoats grama.

850—Creel-Ponciano association, 2 to 45 percent slopes. This map unit is on cuestas and hills. Areas are irregular in shape and are 100 to 1,500 acres in size. The present vegetation is grass and trees. Elevation is 5,600 to 6,600 feet. The average annual precipitation is about 10 to 13 inches, the average annual air temperature is 52 to 57 degrees F, and the average frost-free period is 160 to 180 days.

This unit is 45 percent Creel very channery loam, 2 to 25 percent slopes, and 30 percent Ponciano very stony silty clay loam, 25 to 45 percent slopes. The Creel soil is on summits of hills, cuesta dip slopes, and structural benches. The Ponciano soil is on back slopes and below benches.

Included in this unit are small areas of Ponciano soils that have a bouldery surface layer, soils that have slopes of more than 45 percent, and Creel soils that have a stony surface layer. These included areas are throughout the unit. Other included areas are Rizozo soils on summits of hills; Jornaham soils on toe slopes in the southeastern part of the survey area, north of U.S. Highway 380; soils that are similar to the Ponciano soil but have more than 35 percent rock fragments or have a horizon of calcium carbonate accumulation and are throughout the unit; Rock outcrop as small ledges at the summit areas of hills and cuestas; and La Fonda soils in drainageways. Included areas make up about 25 percent of the total acreage.

The Creel soil is moderately deep and well drained. It formed in alluvium derived dominantly from siltstone and sandstone. Typically, the surface layer is reddish brown very channery loam about 2 inches thick. The upper 15 inches of the underlying material is yellowish red channery loam, and the lower 6 inches is reddish yellow channery loam. Soft sandstone is at a depth of 23 inches.

Permeability of the Creel soil is moderate. Available water capacity is very low. Effective rooting depth is 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

The Ponciano soil is deep and well drained. It formed in colluvium and alluvium derived dominantly from sandstone and mudstone. Typically, the surface layer is reddish brown very stony silty clay loam about 2 inches thick. The subsoil is reddish brown channery silty clay loam and channery silty clay about 40 inches thick. The substratum to a depth of 60 inches or more is reddish brown silty clay loam.

Permeability of the Ponciano soil is slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is moderate. This soil is slightly saline.

This unit is used for livestock grazing and wildlife habitat.

The potential natural plant community on the Creel soil is characterized mainly by black grama, sideoats grama, blue grama, New Mexico feathergrass, and wolftail. Other important plants present on this soil in smaller amounts than those characterizing the potential natural plant community are galleta and winterfat. The average annual production of air-dry vegetation ranges from 1,100 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, black grama, sideoats grama, and New Mexico feathergrass decrease and there is an increase in plants such as hairy grama, ring muhly, galleta, threeawn, and broom snakeweed.

The potential natural plant community on the Ponciano soil is characterized mainly by sideoats grama, black grama, needlegrass, and blue grama. Other important plants present in smaller amounts than those characterizing the potential natural plant community are wolftail, skunkbush sumac, and mountainmahogany. Oneseed juniper is present in some scattered stands. The average annual production of air-dry vegetation ranges from 1,000 pounds per acre in favorable years to 400 pounds in unfavorable years. If the plant community deteriorates, sideoats grama, black grama, needlegrass, and mountainmahogany decrease and there is an increase in plants such as threeawn, galleta, hairy grama, tridens species, broom snakeweed, and oneseed juniper.

This unit is suited to such management practices as proper grazing use, planned grazing systems, fencing, and developing livestock watering facilitiess. Installing pipelines for providing water for livestock on the Ponciano soil is difficult because of slope. Grazing management should be designed to increase the productivity and reproduction of sideoats grama, black grama, and needlegrass.

Prime Farmland

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to producing food, seed, forage, fiber, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. The soils need only to be treated and managed using acceptable farming methods. Adequate moisture and a sufficiently long growing season are required. Prime farmland soils produce the highest yields with minimal units of energy and economic resources, and farming these soils results in the least damage to the environment. There is no prime farmland in this survey area. The salinity and alkalinity of the soils exceeds the acceptable levels.

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

General management needed for crops and for hay and pasture is suggested in this section. The estimated yields of the main crops and hay and pasture plants commonly grown are listed for each soil and the system of land capability classification used by the Soil Conservation Service is explained.

Planners of management systems for individual fields or farms 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 main concerns on the cropland soils in this survey area are a seasonal high water table, which fluctuates between depths of 3 and 6 feet, and salinity. The most severely affected soils are those in an area north of U.S. Highway 60 and in the area in and adjacent to the Bosque del Apache Wildlife Refuge.

Throughout the survey area are small areas where the water table or salinity causes severe problems. Over the years, the fluctuating water table has resulted in sufficient salt deposition to cause most of the soils in irrigated areas to become slightly saline or moderately saline. Because the salinity levels are too high, there are no Class I soils in the survey area. Crop yields are adversely affected by salinity.

Because of the salinity of the soils, avoid tillage operations that turn the soils over. Apply additional water to leach the salts below the root zone. Where row crops are grown, plant on the side of the bed instead of at the peak, where salts concentrate. Use salt tolerate plants, such as small grain, tall fescue, and tall wheatgrass. Install drains to keep the fluctuating water table and salts below the root zone. Applying amendments such as sulfur or gypsum and leaching help to overcome the problems of sodicity and salinity.

Fertilization.—Nitrogen and phosphorus are the main nutrients needed for continued production of high-quality crops. On sandy soils or soils that regularly receive applications of nitrogen and phosphorus, however, potassium may also be needed. Soils in cropland areas should be tested at least every other year to determine present nutrient levels.

All of the soils in the survey area are low in concent of organic matter. Using barnyard manure, growing green manure crops and plowing them under, and returning large amounts of crop residue to the soil are all beneficial practices. Care should be taken to avoid a buildup of salts when large amounts of manure are used.

Irrigation.—All of the cropland in this survey area is irrigated. The water is supplied from the Rio Grande River. Irrigation water should be applied in such a way that good crop growth is obtained without wasting water or causing soil erosion.

To irrigate properly, the water holding capacity of the soil, the depth to which plant roots penetrate, and the water requirements of the crop should be determined. Most crops should be irrigated when 40 to 50 percent of the available soil moisture has been depleted. A soil probe, auger, or a shovel can be used to determine the moisture content of the root zone. The most visible symptoms of moisture stress are wilting leaves or leaves that take on a bluish cast. The more drought-tolerate plants grow slowly if moisture is inadequate. The soil profile should be checked about 48 hours after irrigation to determine if the water reached the desired depth and was applied uniformly.

Furrow and border are the two primary irrigation methods used in the survey area. The border method, which consists of surface flooding between low dikes on leveled land, is most widely used for alfalfa, pasture, and small grain. The furrow method, which consists of running water into deeper, large furrows between the rows, is used for row crops.

If water is applied too rapidly on clayey soils, such as the Armijo soils, it runs off the field. If water is applied too slowly on sandy soils, it penetrates below the root zone and is not available for plant use. The grade and length of run used in the irrigation system should be designed according to the soil characteristics. Concrete lined ditches and pipelines are used to help conserve water.

Tillage.—The soils in this survey area have weak structure. Excessive tillage or tilling when the soil is wet compacts the soils, which restricts the movement of air and water into the root zone. If equipment is used when the soil is wet, a compacted layer, or plowpan, commonly develops several inches below the surface. This 1- to 2-inch-thick, tightly compressed layer restricts the movement of water. Tillage should be performed at varying depths and only when the soil is dry to prevent formation of a plowpan. Chiseling or subsoiling and growing deep-rooted crops such as alfalfa helps to break up a plowpan. Using a grass crop in a long-term rotation also helps to eliminate such restrictive layers. Minimum tillage and growing green manure crops help to improve soil tilth, water intake rate, and structure.

Conservation cropping.—A conservation cropping system consists of growing crops using the proper management practices. The system should control erosion. The rotations may or may not include grasses and legumes. In this survey area, a simple crop sequence is used. The sequence is influenced by the needs and desires of the operator.

Crop residue.—To maintain good crop yields, it is essential to incorporate crop residue into the soil. Crop residue such as stubble from wheat and grain sorghum is an important source of organic matter. Use of crop residue improves the soil structure, improves the water intake rate, and increases soil aeration. Nitrogen should be added following the incorporation of large amounts of residue to allow micro-organisms to decompose the material more rapidly and to maintain yields.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management on irrigated soils are shown in table 3. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 3 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

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, and only for irrigated map units. These levels are defined in the following paragraphs (*14*).

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, IIe. The letter *e* shows that the main limitation is 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.

The capability classification for the irrigated map units in this soil survey are given in table 3. The classification for the nonirrigated map units is available at the local office of the Soil Conservation Service.

Rangeland

By Darrel M. Reasner, district conservationist, Soil Conservation Service.

Rangeland is land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs that are suitable for grazing or browsing. Scattered pinyon and oneseed juniper are dominant in some areas of the survey area. In areas that have similar climate and topography, the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on knowledge about the relationship among the soils, vegetation, and water.

The relationship between mapped soils and vegetation was studied during this survey. The potential natural plant community for each map unit component is given in the section "Detailed Soil Map Units." In the following paragraphs, the potential natural plant community and some of the other rangeland terms used in the map unit descriptions are defined.

A potential natural plant community is an association of plants that are best adapted to a unique combination of environmental factors. Even on the same soil, these plants vary naturally in their proportions or production from place to place or from year to year. The dominant plant or plants are used to characterize the plant community because of their relative stability in areas where abnormal disturbance or physical site deterioration has not occurred. The grasses, forbs, and shrubs that characterize the potential natural plant community on each major soil are listed by common name in the detailed map units.

Once the plant community has been characterized for each soil, similar plant communities are grouped into range sites. A range site is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from other natural plant communities in kind, amount, or proportion of range plants. Soil properties that have the greatest influence on the productivity of range plants are those that affect the availability of moisture and plant nutrients. Other soil properties, such as soil reaction, salt content, and the presence or absence of a high water table during any period of the year, are also important factors in differentiating range sites. Range site descriptions can be used to identify the proportions of the total annual production of each plant. Information on the range sites in this survey area is available in the local office of the Soil Conservation Service.

The average annual production is also given in the detailed map unit descriptions. This is the amount of air-dry 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. The total production that can be used for forage depends upon the kind of grazing animals, the season of use, and other uses that might be made of the resource in addition to grazing. The average annual production includes the current year's growth of leaves, twigs, 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 and unfavorable years. In a favorable year, the amount and distribution of precipitation received during times of favorable soil and air temperatures make growing conditions substantially better than average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

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 in a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is, in this respect, an ecological rating only. It is not in itself a direct "value" rating for any specific use.

An objective in range management is to manage grazing so that the plants growing on a site are about the same in kind and amount as those in the potential natural plant community for that site. Such management generally results in the optimum production of forage, conservation of water, and control of erosion. In some situations, however, a range condition somewhat below potential will promote adequate conservation of soil and water while at the same time producing benefits that contribute to the objective of the landowner or landuser.

Management practices that facilitate range management, conserve water, and reduce erosion are discussed in the detailed map units. Each practice was evaluated separately for each map unit and the limitations, if any, for installation or implementation are discussed.

Woodland Management and Productivity

By Richard J. Reioux, forester, Soil Conservation Service.

Throughout the survey area are soils that support stands of pinyon and juniper. These stands are common at elevations of 5,800 to 8,600 feet. At the lower elevations, juniper is dominant; the percentage of pinyon increases with increasing elevation.

Although pinyon and juniper are not considered commercial species, the demand for them continues to increase. They are used extensively for firewood and fenceposts. Pinyon is used as ornamentals around homes and as Christmas trees. It also produces edible nuts. Many areas of pinyon and juniper are very dense. The production of understory can be increased by thinning or using other management practices that reduce the density of the canopy.

Good management practices include protection from fire, insects, and disease; thinning and pruning to improve growth and quality; cutting to improve the stocking level; and intensive grazing management of the watershed.

The soils that support the best stands of pinyon and juniper are those of the Cuate, Datil, Loarc, Pinon, Pirodel, and Royosa Series.

Woodland Understory Vegetation

By Richard J. Reioux, forester, Soil Conservation Service.

Understory vegetation consists of grasses, forbs, shrubs, and other plants. Most of the pinyon and juniper stands in this survey area, if well managed, can produce enough understory vegetation to support grazing of livestock and wildlife. The quality and quantity 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.

Windbreaks and Environmental Plantings

By Richard J. Reioux, forester, Soil Conservation Service.

Windbreaks protect fields, buildings, yards, and feedlots from wind and blowing soil. They assist in conserving energy and beautifying an area. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf coniferous trees and shrubs provide the most protection.

Field windbreaks or grass barriers 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 and grass barriers protect cropland and crops from wind, help to conserve moisture, and provide food and cover for wildlife. The roots on the field side of a windbreak can be pruned to reduce competition with crops.

Many of the irrigated soils in this survey area have a high content of salt, are subject to ponding, or have a high water table, which limit use as sites for planting trees. Survival and growth of adapted species is only fair.

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. Properly planting healthy, suitably adapted stock on a well prepared site that is maintained in good condition helps to ensure successful establishment of environmental plantings.

Table 4 shows the height that locally grown trees and shrubs are expected to reach in 20 years on irrigated soils. The estimates in table 4 are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional 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 nursery.

Recreation

The soils of the survey area are rated in table 5 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location, accessibility, and intensity of use of the area, the size and shape of the area and its scenic quality, vegetation, access to water, and potential water impoundment sites. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Some soils are limited for recreation use by the short duration, high-intensity periods of flooding in May through September. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 5, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 5 can be supplemented by other information in this survey, for example, interpretations for dwellings without basements and for local roads and streets in table 7 and interpretations for septic tank absorption fields in table 8.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

By William J. Sloan, biologist, Soil Conservation Service.

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.

In table 6, 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 potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

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, tall wheatgrass, bromegrass, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs. 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 bluestem, bristlegrass, buckwheat, mallow, western wheatgrass, New Mexico feathergrass, and grama.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, cottonwood, ash, hackberry, baccaris, mesquite, willow, arrowweed, and saltcedar. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, New Mexico-olive, and sumac.

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 pine, spruce, fir, 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 mountainmahogany, fourwing saltbush, dalea, cliffrose, snakeweed and yucca.

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, saltgrass, barnyardgrass, rushes, sedges, and reeds.

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.

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. The wildlife attracted to these areas include Gambel's quail, scaled quail, pheasant, mourning dove, field sparrow, cottontail, and kit fox.

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 wild turkey, thrushes, woodpeckers, gray fox, raccoon, elk, mule deer, mountain lion, and bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are cranes, ducks, geese, herons, shore birds, redwing blackbird, muskrat, and beaver.

Habitat for rangeland wildlife consists of areas of shrubs and wild herbaceous plants. Wildlife attracted to rangeland include antelope, deer, scaled quail, meadowlark, and lark bunting.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building Site Development, Sanitary Facilities, Construction Materials, and Water Management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section 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 in this section. 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 in this section. 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 to 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 kind 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, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, 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 tables, along with the soil maps and soil 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.

Building Site Development

Table 7 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations 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.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

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 (*1, 2*).

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 8 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations 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.

Table 8 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 8 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage because of rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 8 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

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 cloddy 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 surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 9 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They 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.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, 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 surface 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 table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. 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, 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 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. They may have layers of suitable material, but the material is less than 3 feet thick.

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. In table 9, 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 soil series 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.

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 surface 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.

Water Management

Table 10 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are 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 increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

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 this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface 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.

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 reduce 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.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

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 listed in tables are explained on the following pages.

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 shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 11 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area (*12*). 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 (*13*). 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 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the system adopted by the American Association of State Highway and Transportation Officials (*1*) and the Unified soil classification system (*2*).

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.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry 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 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

Table 12 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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 units under "Taxonomic Units and Their Morphology."

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

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 inches of water per inch of soil for each major soil layer. 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 of each major horizon 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 table. Salinity affects the suitability of a soil for crop production, the stability of the soil if used as construction material, and the potential of the soil to corrode metal and concrete.

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.

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 and the amount of soil lost. Soils are grouped according to the amount of stable aggregates 0.84 millimeters in size. These are represented idealistically by USDA textural classes. Soils containing rock fragments can occur in any group.

1. 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 sands, loamy fine sands, and loamy very fine sands. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

3. Sandy loams, coarse 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.

4L. Calcareous loamy soils that are less than 35 percent clay and more than 5 percent finely divided calcium carbonate. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, 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.

5. Loamy soils that are less than 18 percent clay and less than 5 percent finely divided calcium carbonate and sandy clay loams and sandy clays that are less than 5 percent finely divided calcium carbonate. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.

6. Loamy soils that are 18 to 35 percent clay and less than 5 percent finely divided calcium carbonate, except silty clay loams. These soils are very slightly erodible. Crops can easily be grown.

7. Silty clay loams that are less than 35 percent clay and less than 5 percent finely divided calcium carbonate. These soils are very slightly erodible. Crops can easily be grown.

8. Stony or gravelly soils and other soils not subject to wind erosion.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 12, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 13 gives estimates of various soil and water features. 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 intake 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.

Table 13 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal 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; November-May, for example, means that flooding can occur during the period November through May.

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. Indicated in table 13 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An *artesian* water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

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. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Risk of corrosion 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 (*15*). 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 14 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Ten 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 Entisol.

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 Psamment (*Psamm*, meaning sand, plus *ent*, from Entisol).

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 Torripsamments (*Torr*, meaning hot and dry, plus *psamment*, the suborder of the Entisols that have an torric moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. 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. Extragrades 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 Torripsamments.

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 fine-loamy, mixed, nonacid, thermic Typic Torripsamments.

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 substratum 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* (*13*). Many of the technical terms used in the descriptions are defined in *Soil Taxonomy* (*15*). Unless otherwise stated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the unit.

The map units of each taxonomic unit are described in the section "Detailed Soil Map Units."

Abrazo Series

The soils in the Abrazo series are classified as fine, mixed, mesic Aridic Argiustolls. These moderately deep, well drained, slowly permeable soils formed in alluvium and colluvium derived mainly from tuff. They are on hills and mountains. Slope is 10 to 50 percent. Elevation is 6,500 to 8,600 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of an Abrazo gravelly sandy loam in an area of Abrazo-Motoqua, cool-Rock outcrop complex, 10 to 50 percent slopes; about 37 miles southwest of Magdalena; 2,210 feet north and 2,590 feet east of the southwest corner of sec. 6, T. 7 S., R. 8 W.

A—0 to 7 inches; dark brown (7.5YR 4/2) gravelly sandy loam, dark brown (7.5YR 3/2) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots; 20 percent pebbles; neutral; clear smooth boundary.

Bt1—7 to 10 inches; brown (7.5YR 5/2) cobbly clay loam, dark brown (7.5YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; common fine and very fine roots; common thin clay films on faces of peds and in pores; 20 percent pebbles and 10 percent cobbles; neutral; clear smooth boundary.

Bt2—10 to 20 inches; brown (7.5YR 5/4) cobbly clay loam, dark brown (7.5YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; common fine and very fine roots; common moderately thick clay films on faces of peds; 10 percent pebbles and 20 percent cobbles; mildly alkaline; clear smooth boundary.

Bt3—20 to 27 inches; strong brown (7.5YR 5/6) very cobbly clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; few fine and very fine roots; few moderately thick clay films on soil-pebble interfaces; 25 percent cobbles and 15 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

R—27 inches; tuff.

Depth to bedrock ranges from 20 to 40 inches. Thickness of the mollic epipedon ranges from 10 to 13 inches.

The A horizon is 15 to 30 percent rock fragments.

The B horizon has chroma of 2 to 6 when dry or moist. Rock fragment content ranges from 15 to 40 percent; the weighted average is less than 35 percent. The fine earth fraction includes clay loam or clay; it averages 35 to 45 percent clay.

Adelino Variant

The soils in the Adelino Variant are classified as fine-loamy, mixed, thermic Typic Camborthids. These deep, well drained, moderately permeable soils formed in colluvium and alluvium derived mainly from rhyolite and river deposits. They are on fan terraces. Slope is 15 to 50 percent. Elevation is 4,600 to 4,800 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of an Adelino Variant very stony sandy loam in an area of Adelino Variant-Caliza very stony sandy loams, 15 to 50 percent slopes; about 100 feet southwest of the drive-in theatre screen in the city of Socorro; 2,750 feet east and 1,950 feet south of the northwest corner of sec. 24, T. 3 S., R. 1 W. (projected).

A—0 to 4 inches; brown (7.5YR 5/4) very stony sandy loam, brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; 45 percent pebbles, 5 percent cobbles, and 2 percent stones; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw—4 to 11 inches; brown (7.5YR 4/4) gravelly sandy clay loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; 25 percent pebbles and 5 percent cobbles; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk1—11 to 32 inches; light brown (7.5YR 6/4) gravelly sandy clay loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; 20 percent pebbles and 5 percent cobbles; violently effervescent; disseminated calcium carbonate segregated in common fine irregular seams; moderately alkaline; clear smooth boundary.

Bk2—32 to 54 inches; light brown (7.5YR 6/4) gravelly sandy clay loam, brown (7.5YR 5/4) moist; weak coarse and moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; 20 percent pebbles and 5 percent cobbles; violently effervescent; disseminated calcium carbonate segregated in few fine irregular filaments or threads; strongly alkaline; clear wavy boundary.

Bk3—54 to 60 inches; light brown (7.5YR 6/4) gravelly fine sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few very fine, fine, and medium roots; 20 percent pebbles and 10 percent cobbles; violently effervescent; disseminated calcium carbonate; very strongly alkaline.

Rock fragment content ranges from 15 to 60 percent.

Texture of the fine earth fraction of the B horizon is loam, fine sandy loam, sandy loam, or sandy clay loam.

Aftaden Series

The soils in the Aftaden series are classified as loamy, mixed, thermic Lithic Haplargids. These shallow, well drained, moderately rapidly permeable soils formed in eolian sediment. They are on ridges. Slope is 1 to 9 percent. Elevation is 4,400 to 5,000 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of an Aftaden loamy fine sand in an area of Aftaden-Akela-Lava flows association, 1 to 15 percent slopes; about 30 miles south of San Antonio on the Pedro Armendaris Grant No. 33, 1.25 miles southwest of North Well; 1,100 feet north and 400 feet west of the southwest corner of sec. 22, T. 8 S., R. 1 W. (projected).

A—0 to 2 inches; brown (7.5YR 5/4) loamy fine sand, dark brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine roots; 5 percent pebbles; neutral; abrupt wavy boundary.

Bw—2 to 5 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine and medium roots; 10 percent pebbles; neutral; abrupt wavy boundary.

Bt—5 to 11 inches; strong brown (7.5YR 5/6) gravelly sandy loam, strong brown (7.5YR 4/6) moist; moderate very fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine and medium roots; few medium pores; few thin clay films in pores and as bridges; 15 percent pebbles; neutral; abrupt wavy boundary.

R—11 inches; basalt.

Depth to basalt ranges from 10 to 15 inches.

The B horizon is 10 to 30 percent rock fragments. Texture of the fine earth fraction is fine sandy loam, sandy loam, very fine sandy loam, or loam.

Agua Series

The soils in the Agua series are classified as coarse-loamy over sandy or sandy-skeletal, mixed (calcareous), thermic Typic Torrifluvents. These deep, well drained, moderately permeable soils formed in recent alluvium. They are on the Rio Grande flood plain. Slope is 0 to 1 percent. Elevation is 4,400 to 4,800 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Agua clay loam, 0 to 1 percent slopes; about 1 mile east and 0.75 mile south of Luis Lopez; 470 feet south and 250 feet east of the northwest corner of sec. 8, T. 4 S., R. 1 E. (projected).

Ap—0 to 8 inches; pale brown (10YR 6/3) clay loam, dark brown (10YR 3/3) moist; massive; very hard, firm, sticky and plastic; many fine roots; many fine tubular pores; slightly effervescent; disseminated calcium carbonate; strongly alkaline; abrupt smooth boundary.

C1—8 to 18 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; many fine roots; many fine tubular pores; slightly effervescent; disseminated calcium carbonate; strongly alkaline; abrupt smooth boundary.

C2—18 to 23 inches; very pale brown (10YR 7/4) very fine sandy loam, brown (10YR 5/3) moist; massive; hard, friable, slightly sticky and slightly plastic; common fine roots; many very fine and few fine tubular pores; slightly effervescent; disseminated calcium carbonate; strongly alkaline; abrupt smooth boundary.

C3—23 to 60 inches; pale brown (10YR 6/3) fine sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few fine roots; many very fine irregular pores; mildly alkaline.

Depth to the sandy textured substratum ranges from 21 to 36 inches.

Salinity ranges from 4 to 8 millimhos per centimeter.

The upper part of the C horizon has value of 6 or 7 when dry and 3 to 6 when moist, and it has chroma of 2 to 4 when dry or moist. It is silt loam or very fine sandy loam and has less than 18 percent clay.

Akela Series

The soils in the Akela series are classified as loamy-skeletal, mixed (calcareous), thermic Lithic Torriorthents. These very shallow and shallow, well drained, moderately permeable soils formed in local alluvium and eolian sediment. They are on foot slopes and ridges. Slope is 0 to 15 percent. Elevation is 4,400 to 5,000 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of an Akela very gravelly loam in an area of Akela-Lava flows-Armendaris association, 0 to 30 percent slopes; about 34 miles south of Socorro; 550 feet west and 520 feet south of the northeast corner of sec. 36, T. 8 S., R. 1 E.

A—0 to 3 inches; brown (7.5YR 5/4) very gravelly loam, dark brown (7.5YR 4/4) moist; weak medium platy structure; soft, very friable, slightly sticky and nonplastic; many very fine roots; 50 percent pebbles; strongly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

Bk1—3 to 6 inches; light brown (7.5YR 6/4) very gravelly loam, brown (7.5YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine roots; 35 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk2—6 to 12 inches; light brown (7.5YR 6/4) extremely cobbly loam, dark brown (7.5YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine roots; 40 percent pebbles and 40 percent cobbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.
R—12 inches; basalt coated with lime at soil-rock contact.

Depth to basalt is 4 to 20 inches. Rock fragment content averages 35 to 60 percent.

The A horizon has hue of 7.5YR or 10YR, and it has value of 5 or 6 when dry and 4 or 5 when moist. It is 15 to 50 percent pebbles and 0 to 10 percent cobbles. Texture of the fine earth fraction is loam or loamy fine sand.

The Bk horizon has hue of 7.5YR or 10YR, and it has value of 6 or 7 when dry and 4 or 5 when moist. It is 35 to 50 percent pebbles and 20 to 40 percent cobbles. Texture of the fine earth fraction is fine sandy loam or loam.

Alicia Series

The soils in the Alicia series are classified as fine-silty, mixed, mesic Ustollic Camborthids. These deep, well drained, moderately slowly permeable soils formed in alluvium derived dominantly from siltstone and sandstone. They are on fan terraces and in swales. Slope is 1 to 5 percent. Elevation is 5,400 to 6,800 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 56 degrees F, and the frost-free period is 145 to 165 days.

Typical pedon of an Alicia very fine sandy loam in an area of Rizozo-Alicia-Rock outcrop association, 1 to 30 percent slopes; about 26 miles north of Magdalena; 2,575 feet west and 825 feet south of the northeast corner of sec. 9, T. 3 N., R. 4 W.

A—0 to 5 inches; reddish brown (5YR 5/4) very fine sandy loam, reddish brown (5YR 4/4) moist; weak thin platy structure parting to and weak very fine granular; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; 10 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.
Bw—5 to 15 inches; reddish brown (5YR 4/4) loam, yellowish red (5YR 4/6) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and many very fine roots; 10 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.
Bk1—15 to 22 inches; reddish brown (5YR 5/4) silt loam, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; common fine and many very fine roots; 5 percent pebbles; strongly effervescent; common fine irregular soft masses of calcium carbonate; moderately alkaline; clear smooth boundary.
Bk2—22 to 34 inches; reddish brown (5YR 5/4) silt loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; few fine and many very fine roots; 5 percent pebbles; strongly effervescent; many fine irregular soft masses of calcium carbonate; moderately alkaline; clear wavy boundary.
BC—34 to 51 inches; reddish brown (5YR 5/4) silt loam, yellowish red (5YR 4/6) moist; weak coarse subangular blocky structure; hard, friable, slightly sticky and plastic; few fine and common very fine roots; 5 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.
C—51 to 60 inches; red (2.5YR 4/6) silty clay loam, dark red (2.5YR 3/6) moist; massive; soft, very friable, sticky and plastic; few fine and very fine roots; 10 percent pebbles; slightly effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has value of 5 or 6 when dry and 3 or 4 when moist. Texture is very fine sandy loam or loam.

The B horizon has hue of 2.5YR or 5YR, value of 3 or 4 when moist, and chroma of 4 or 6 when moist. Texture is loam, silt loam, silty clay loam, or clay loam. Pebble content is 0 to 5 percent.

The C horizon has value of 4 or 6 when dry and 3 or 4 when moist, and it has chroma of 4 or 6 when dry or moist. Pebble content is 5 to 10 percent.

Anthony Series

The soils in the Anthony series are classified as coarse-loamy, mixed (calcareous), thermic Typic Torrifluvents. These deep, well drained, moderately rapidly permeable soils formed in recent alluvium. They are on the Rio Grande flood plain. Slope is 0 to 2 percent. Elevation is 4,400 to 4,800 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Anthony sandy loam, 0 to 1 percent slopes; about 2.75 miles north of San Antonio on the west side of the Brass lateral irrigation ditch; 2,325 feet east and 1,750 feet south of the northwest corner of sec. 17, T. 4 S., R. 1 E.

Ap—0 to 12 inches; light brown (7.5YR 6/4) sandy loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; hard, very friable, nonsticky and nonplastic; many fine roots; common fine tubular pores and many fine interstitial pores; strongly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

C1—12 to 24 inches; light yellowish brown (10YR 6/4) loamy very fine sand, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, nonsticky and nonplastic; common fine roots; many very fine interstitial pores; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

C2—24 to 38 inches; light yellowish brown (10YR 6/4) loamy very fine sand, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine roots; few fine tubular pores and many very fine interstitial pores; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

C3—38 to 43 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; few fine prominent reddish yellow (5YR 6/8) mottles; weak thin platy structure; hard, very friable, slightly sticky and nonplastic; few fine roots; few fine tubular pores and many fine interstitial pores; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

C4—43 to 49 inches; very pale brown (10YR 7/4) silt loam, yellowish brown (10YR 5/4) moist; few fine faint reddish yellow (5YR 7/6) mottles; massive; hard, very friable, sticky and nonplastic; few fine and very fine roots; many very fine tubular pores; strongly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

C5—49 to 56 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; common fine prominent light red (2.5YR 6/6) mottles; massive; very hard, friable, slightly sticky and nonplastic; few fine roots; many very fine tubular pores; strongly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

C6—56 to 60 inches; very pale brown (10YR 8/4) fine sand, light yellowish brown (10YR 6/4) moist; single grain; loose, nonsticky and nonplastic; few fine roots; many fine interstitial pores; slightly effervescent; disseminated calcium carbonate; mildly alkaline.

Salinity ranges from 0 to 16 millimhos per centimeter.

The A horizon has hue of 7.5YR or 10YR, value of 5 or 6 when dry and 3 or 4 when moist, and chroma of 3 or 4 when dry or moist. It is sandy loam or fine sand.

The C horizon above a depth of 40 inches is very fine sand, loamy very fine sand, or very fine sandy loam. Fine sand, very fine sand, or silt loam is below a depth of 40 inches. The horizon averages less than 18 percent clay, and some pedons have thin strata of clayey material.

The Anthony soils in this survey area are taxadjunct to the Anthony series. They differ in that they have very fine sand and loamy very fine sand in the control section, but this difference does not significantly affect their use and management.

Anthony Variant

The soils in the Anthony Variant are classified as coarse-loamy over clayey, mixed (calcareous), thermic Typic Ustifluvents. These deep, well drained, slowly permeable soils formed in recent alluvium. They are on the Rio Grande flood plain. Slope is 0 to 1 percent. Elevation is 4,400 to 4,800 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Anthony Variant sandy clay loam, 0 to 1 percent slopes; about 2.5 miles north of San Antonio; 3,175 feet east and 300 feet south of the northeast corner of sec. 20, T. 4 S., R. 1 E.

Ap—0 to 10 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; few very fine and fine pores; strongly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

C1—10 to 25 inches; light brown (7.5YR 6/4) loamy very fine sand, brown (7.5YR 5/4) moist; few fine distinct red (2.5YR 4/8) mottles; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C2—25 to 37 inches; brown (7.5YR 5/4) clay, dark brown (7.5YR 4/4) moist; common fine distinct red (7.5YR 4/6) mottles; massive; extremely hard, very firm, very sticky and very plastic; few very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C3—37 to 60 inches; pink (7.5YR 7/4) sand, brown (7.5YR 5/4) moist; single grain; loose, nonsticky and nonplastic; slightly effervescent; disseminated calcium carbonate; neutral.

Depth to the clay layer ranges from 23 to 38 inches. Thickness of this layer ranges from 9 to 15 inches.

Salinity ranges from 8 to 16 millimhos per centimeter.

Texture of the C1 horizon is loamy very fine sand, fine sandy loam, or sandy loam.

Arizo Series

The soils in the Arizo series are classified as sandy-skeletal, mixed, thermic Typic Torriorthents. These deep, excessively drained, very rapidly permeable soils formed in gravelly alluvium. They are on flood plains, bars, and alluvial fans adjacent to arroyos and drainageways. Slope is 0 to 5 percent. Elevation is 4,400 to 5,500 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Arizo gravelly sandy loam in an area of Arizo-Riverwash complex, 0 to 5 percent slopes; about 2.5 miles northwest of San Antonio; 1,700 feet west and 2,400 feet north of the southeast corner of sec. 24, T. 4 S., R. 1 W.

A—0 to 2 inches; yellowish brown (10YR 5/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak thin platy structure parting to granular structure; soft, very friable, nonsticky and nonplastic; few fine and common very fine roots; 20 percent pebbles and 5 percent cobbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

C1—2 to 15 inches; light brown (7.5YR 6/4) gravelly loamy coarse sand, brown (7.5YR 4/4) moist; weak medium subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; few coarse and common very fine roots; 20 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C2—15 to 21 inches; pink (7.5YR 7/4) very gravelly coarse sand, brown (7.5YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few fine and common very fine roots; 35 percent pebbles and 5 percent cobbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C3—21 to 27 inches; light brown (7.5YR 6/4) very gravelly loamy coarse sand, brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and common very fine roots; 40 percent pebbles and 10 percent cobbles; strongly effervescent; disseminated calcium carbonate; strongly alkaline; clear wavy boundary.

C4—27 to 60 inches; pink (7.5YR 7/4) very gravelly coarse sand, brown (7.5YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few medium and very fine roots; 50 percent pebbles and 5 percent cobbles; strongly effervescent; disseminated calcium carbonate; mildly alkaline.

The A horizon has hue of 7.5YR or 10YR. It is 15 to 30 percent pebbles, 0 to 10 percent cobbles, and 0 to 5 percent stones. Texture of the fine earth fraction is loamy sand or sandy loam.

The C horizon has value of 5 to 7 when dry and 4 or 5 when moist. Content of rock fragments, mainly pebbles and cobbles, ranges from 20 to 55 percent. The fine earth fraction is loamy coarse sand or coarse sand with thin strata of slightly finer textured material.

Armendaris Series

The soils in the Armendaris series are classified as fine, mixed, thermic Ustollic Haplargids. These deep, well drained, slowly permeable soils formed in local alluvium derived mainly from loess. They are in circular depressional areas and in swales associated with basalt lava flows. Slope is 0 to 1 percent. Elevation is 4,600 to 5,000 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of an Armendaris silt loam in an area of Akela-Lava flows-Armendaris association, 0 to 30 percent slopes; about 28 miles south of San Antonio on the large lava flow in the Jornada del Muerto Basin; 1,050 feet north and 275 feet west of the southeast corner of sec. 13, T. 9 S., R. 1 W. (projected).

A—0 to 2 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak thick platy structure parting to moderate medium platy; soft, very friable, sticky and plastic; common fine and few very fine roots; few very fine vesicular pores; neutral; clear smooth boundary.

BA—2 to 5 inches; light brown (7.5YR 6/4) silty clay loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; common very fine continuous tubular pores; neutral; clear smooth boundary.

Bt1—5 to 15 inches; dark brown (7.5YR 4/4) silty clay, dark brown (7.5YR 3/4) moist; strong coarse subangular blocky structure; hard, firm, sticky and very plastic; common fine and few very fine roots; few very fine continuous tubular pores within peds; few thin clay films on faces of peds and in pores; mildly alkaline; clear smooth boundary.

Bt2—15 to 26 inches; brown (7.5YR 5/4) silty clay, brown (7.5YR 4/4) moist; moderate coarse subangular blocky structure; hard, friable, sticky and very plastic; few fine and common very fine roots; few fine continuous tubular pores within peds; few thin clay films on faces of peds and in pores; mildly alkaline; clear smooth boundary.

Bt3—26 to 35 inches; brown (7.5YR 5/4) silty clay, brown (7.5YR 4/4) moist; weak coarse subangular blocky structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; few fine and common very fine roots; common fine continuous tubular pores within peds; few thin clay films on faces of peds and in pores; mildly alkaline; clear wavy boundary.

Bk1—35 to 41 inches; brown (7.5YR 5/4) silty clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; common very fine vesicular pores and common fine continuous tubular pores within peds; slightly effervescent; disseminated calcium carbonate throughout soil matrix and also segregated in few fine filaments; moderately alkaline; clear smooth boundary.

Bk2—41 to 49 inches; light brown (7.5YR 6/4) silty clay loam, brown (7.5YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; common very fine vesicular pores and common fine continuous tubular pores within peds; slightly effervescent; disseminated calcium carbonate and calcium carbonate segregated in few fine filaments; moderately alkaline; clear smooth boundary.

CB—49 to 60 inches; brown (7.5YR 5/4) silty clay loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; common very fine vesicular pores and common very fine continuous tubular pores; slightly effervescent; disseminated calcium carbonate; moderately alkaline.

The profile is 0 to 5 percent basalt pebbles.

The depth to the base of the Bt horizon and the top of the Bk horizon is 32 to 38 inches.

The calcium carbonate equivalent in the Bk horizon is 1 to 5 percent.

Armijo Series

The soils in the Armijo series are classified as fine, montmorillonitic, thermic Typic Torrerts. These deep, well drained, very slowly permeable soils formed in recent alluvium. They are on terraces and flood plains and in old and dry oxbow lakes. Slope is 0 to 1 percent. Elevation is 4,400 to 5,100 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Armijo clay, 0 to 1 percent slopes; about 1 mile southeast of Lemitar; 775 feet south and 1,900 feet east of the northwest corner of sec. 13, T. 2 S., R. 1 W.

Ap—0 to 10 inches; brown (7.5YR 5/2) clay, brown (7.5YR 4/4) moist; strong coarse subangular blocky structure; very hard, very firm, sticky and plastic; many very fine and few fine roots; few cracks 2 centimeters wide; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C1—10 to 44 inches; pinkish gray (7.5YR 6/2) clay, brown (7.5YR 4/2) moist; massive; very hard, very firm, sticky and plastic; common very fine roots; intersecting slickensides; few cracks 2 centimeters wide; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

C2—44 to 60 inches; light brown (7.5YR 6/4) sandy clay loam, brown (7.5YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; slightly effervescent; disseminated calcium carbonate; strongly alkaline.

Salinity ranges from 8 millimhos to more than 16 millimhos per centimeter.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6 when dry and 3 or 4 when moist, and chroma of 2 to 4 when dry or moist. The texture is clay, silty clay, or silty clay loam.

The C horizon has hue of 7.5YR or 10YR, value of 5 or 6 when dry and 4 or 5 when moist, and chroma of 2 to 4 when dry or moist. It is clay or silty clay.

The 2C horizon in some pedons is stratified, contains layers of contrasting material, and is deeper than 40 inches.

Augustine Series

The soils in the Augustine series are classified as fine-loamy, mixed, mesic Aridic Haplustalfs. These deep, well drained, moderately permeable soils formed in alluvium derived from rhyolitic tuff and lava. They are on bajadas. Slope is 1 to 6 percent. Elevation is 6,500 to 7,500 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of Augustine fine sandy loam, 1 to 6 percent slopes; about 20 miles west and 18 miles north of Magdalena; 425 feet east and 500 feet north of the southwest corner of sec. 21, T. 1 S., R. 8 W.

A—0 to 3 inches; brown (7.5YR 5/2) fine sandy loam, dark brown (7.5YR 3/2) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; common fine roots; neutral; clear wavy boundary.

Bt1—3 to 16 inches; brown (7.5YR 4/2) clay loam, brown (7.5YR 4/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and slightly plastic; common fine and very fine roots; few thin clay films in pores and as collodial stains; mildly alkaline; clear wavy boundary.

Bt2—16 to 33 inches; brown (7.5YR 4/2) clay loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; few very fine roots; common thin clay films in pores and as collodial stains; about 8 percent pebbles; mildly alkaline; clear wavy boundary.

Btk—33 to 37 inches; brown (7.5YR 5/4) clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few very fine roots; common thin clay films in pores and on coarse fragments; 5 percent pebbles; strongly effervescent; calcium carbonate in seams and as soft masses; mildly alkaline; gradual wavy boundary.

Bk—37 to 60 inches; pinkish gray (7.5YR 7/2) clay loam, pinkish gray (7.5YR 6/2) moist; massive; hard, friable, slightly sticky and slightly plastic; violently effervescent; disseminated calcium carbonate; moderately alkaline.

The Bt horizon has value of 4 or 5 when dry and 3 or 4 when moist, and chroma of 2 to 4 when dry or moist. Coarse fragment content ranges from 0 to 15 percent. The calcium carbonate equivalent is 5 to 12 percent in the upper 40 inches and is as much as 25 percent below a depth of 40 inches.

Barana Series

The soils in the Barana series are classified as fine-silty, mixed, thermic Ustollic Haplargids. These deep, well drained, moderately slowly permeable soils formed in mixed alluvium. They are on plains and in swales. Slope is 0 to 2 percent. Elevation is 4,800 to 5,300 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Barana loam, 0 to 2 percent slopes; about 14 miles east of San Antonio; 150 feet north and 1,500 feet west of the southeast corner of sec. 34, T. 4 S., R. 3 E.

A—0 to 3 inches; reddish brown (5YR 5/3) loam, reddish brown (5YR 4/3) moist; medium platy structure parting to weak fine granular; soft, very friable, weak slightly sticky and nonplastic; common fine and few very fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

Btk1—3 to 8 inches; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 4/4) moist; weak coarse subangular blocky structure; hard, friable, sticky and plastic; few fine and common very fine roots; common very fine continuous tubular pores; few thin clay films on faces of peds and in pores; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Btk2—8 to 17 inches; reddish brown (5YR 5/4) silty clay loam, reddish brown (5YR 4/4) moist; weak coarse prismatic structure parting to moderate coarse subangular blocky; hard, friable, sticky and plastic; common fine and very fine roots; common very fine continuous tubular pores; few thin clay films on faces of peds and in pores; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated in few fine filaments; moderately alkaline; clear wavy boundary.

Bk—17 to 23 inches; light brown (7.5YR 6/4) silty clay loam, brown (7.5YR 5/4) moist; weak coarse and moderate medium subangular blocky structure; hard, friable, sticky and plastic; few fine and common very fine roots; common very fine continuous tubular pores; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated in few fine filaments; moderately alkaline; clear wavy boundary.

2Bkb1—23 to 41 inches; reddish brown (5YR 5/4) loam, reddish brown (5YR 4/4) moist; weak coarse subangular blocky structure; slightly hard, friable, sticky and slightly plastic; few fine and common very fine roots; common very fine discontinuous tubular pores; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated in few fine filaments; moderately alkaline; clear wavy boundary.

2Bkb2—41 to 47 inches; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; common very fine discontinuous tubular pores; 5 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

2Bkb3—47 to 60 inches; light reddish brown (5YR 6/4) clay loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; common very fine discontinuous tubular pores; 5 percent pebbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated in common fine filaments; moderately alkaline.

The B horizon is clay loam, silty clay loam, or loam with 18 to 35 percent clay.

Belen Series

The soils in the Belen series are classified as clayey over loamy, montmorillonitic (calcareous), thermic Vertic Torrifluvents. These deep, well drained, very slowly permeable soils formed in recent mixed alluvium. They are on the Rio Grande flood plain and in old and dry oxbow lakes. Slope is 0 to 1 percent. Elevation is 4,400 to 4,600 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Belen clay, 0 to 1 percent slopes; about 35 miles southwest of Socorro; 3,750 feet south and 4,500 feet east of the northeast corner of sec. 23, T. 9 S., R. 3 W.

A—0 to 5 inches; brown (7.5YR 5/4) clay, brown (7.5YR 4/4) moist; moderate medium granular structure parting to strong fine granular; very hard, friable, sticky and plastic; fine and very fine roots; few cracks 1 to 2 centimeters wide; slightly effervescent; disseminated calcium carbonate; strongly alkaline; clear smooth boundary.
C1—5 to 24 inches; brown (7.5YR 5/4) clay, brown (7.5YR 4/4) moist; massive; very hard, firm, sticky and plastic; few very fine roots; cracks 1 to 2 centimeters wide; slightly effervescent; disseminated calcium carbonate; strongly alkaline; abrupt smooth boundary.
C2—24 to 31 inches; light yellowish brown (10YR 6/4) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; 5 percent pebbles; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.
C3—31 to 60 inches; pale brown (10YR 6/3) very fine sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; slightly effervescent; disseminated calcium carbonate; moderately alkaline.

Depth to the loamy material ranges from 20 to 34 inches.
Salinity ranges from 8 to 16 millimhos per centimeter.

Berino Series

The soils in the Berino series are classified as fine-loamy, mixed, thermic Typic Haplargids. These deep, well drained, moderately permeable soils formed in alluvial and eolian material. They are on bajadas, plains, and broad fan terraces. Slope is 1 to 5 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Berino fine sand in an area of Berino-Dona Ana association, 1 to 5 percent slopes; about 11 miles east of San Antonio; 175 feet east and 96 feet north of the southeast corner of sec. 7, T. 5 S., R. 3 E.

A—0 to 4 inches; reddish brown (5YR 5/4) fine sand, reddish brown (5YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots; moderately alkaline; abrupt smooth boundary.
Bw—4 to 10 inches; reddish brown (5YR 5/4) sandy loam, brown (5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many fine and very fine roots; moderately alkaline; clear smooth boundary.
Bt—10 to 24 inches; reddish brown (5YR 5/4) sandy clay loam, brown (5YR 4/4) moist; weak medium prismatic structure parting to weak fine subangular blocky; slightly hard, friable, slightly sticky and plastic; few medium roots and common fine and very fine roots; few fine tubular pores; common moderately thick clay films on faces of peds; mildly alkaline; clear smooth boundary.
Btk—24 to 31 inches; reddish brown (5YR 5/4) sandy clay loam, reddish brown (5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.
Bk—31 to 60 inches; pink (5YR 7/3) sandy loam, reddish brown (5YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; strongly effervescent; disseminated calcium carbonate; strongly alkaline.

Depth to the calcic horizon is 24 to 35 inches.
The A horizon has hue of 5YR or 7.5YR. Texture is sandy loam or fine sand.
The Bt horizon has hue of 5YR or 7.5YR, and it has value of 4 to 6 when dry. Texture is sandy loam, sandy clay loam, or clay loam.
The Bk horizon has hue of 5YR or 7.5YR, and it has value of 5 to 7 when dry and 4 or 5 when moist. Texture is sandy loam or loam.

Bluepoint Series

The soils in the Bluepoint series are classified as mixed, thermic Typic Torripsamments. These deep, excessively drained, rapidly permeable soils formed in alluvial and eolian material. They are on alluvial fans, plains, and terraces. Slope is 1 to 30 percent. Elevation is 4,500 to 5,200 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Bluepoint loamy fine sand, 1 to 9 percent slopes; about 25 miles south of Socorro and 1/2 mile east of the ruins of Val Verde; 2,100 feet north and 450 feet west of the southeast corner of sec. 15, T. 7 S., R. 1 W.

A—0 to 5 inches; light yellowish brown (10YR 6/4) loamy fine sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few coarse and fine roots and many very fine roots;

slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1—5 to 28 inches; light yellowish brown (10YR 6/4) loamy fine sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few medium and very fine and common fine roots roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

C2—28 to 53 inches; light yellowish brown (10YR 6/4) loamy fine sand, brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few medium, fine and, very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C3—53 to 60 inches; pink (7.5YR 7/4) loamy sand, brown (7.5YR 5/4) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few medium and fine roots; strongly effervescent; disseminated calcium carbonate; strongly alkaline.

Salinity ranges from 4 to 8 millimhos per centimeter.

The A horizon has hue of 7.5YR or 10YR, and it has value of 5 or 6 when dry and 4 or 5 when moist. It is loamy sand, loamy fine sand, or very gravelly loamy sand.

The C horizon has hue of 7.5YR or 10YR, value of 6 or 7 when dry and 4 to 6 when moist, and chroma of 3 to 6 when dry or moist. It has a weighted average gravel content of 0 to 15 percent and has some thin horizons that are as much as 35 percent gravel. The texture of the fine earth fraction is loamy fine sand, loamy sand, fine sand, or coarse sand.

Brazito Series

The soils in the Brazito series are classified as mixed, thermic Typic Torripsamments. These deep, well drained, rapidly permeable soils formed in recent alluvium. They are on the Rio Grande flood plain. Slope is 0 to 1 percent. Elevation is 4,400 to 4,800 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Brazito fine sandy loam, 0 to 1 percent slopes; about 3 miles south of San Antonio on the Bosque Del Apache National Wildlife Refuge; 1,175 feet south and 1,675 feet east of the northwest corner of sec. 20, T. 5 S., R. 1 E. (projected).

Ap1—0 to 10 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Ap2—10 to 16 inches; light yellowish brown (10YR 6/4) loamy fine sand, brown (10YR 5/3) moist; weak fine subangular blocky structure parting to weak fine granular; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

C—16 to 60 inches; very pale brown (10YR 7/3) coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few fine and very fine roots; 5 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline.

Salinity of the profile ranges from 4 to 8 millimhos per centimeter.

The C horizon is dominantly coarse sand but ranges to sand or loamy sand.

Bucklebar Series

The soils in the Bucklebar series are classified as fine-loamy, mixed, thermic Typic Haplargids. These deep, well drained, moderately permeable soils formed in alluvium derived mainly from siltstone, sandstone, and shale. They are on bajadas and in broad swales. Slope is 1 to 3 percent. Elevation is 4,900 to 5,500 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Bucklebar sandy clay loam, 1 to 3 percent slopes; about 12 miles northeast of Socorro on the Sevilleta National Wildlife Refuge; 650 feet north and 400 feet east of the southwest corner of sec. 24, T. 1 S., R. 1 E. (projected).

A—0 to 4 inches; reddish brown (5YR 4/4) sandy clay loam, dark reddish brown (5YR 3/4) moist; weak medium platy structure parting to moderate very fine granular; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; 5 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Btk1—4 to 15 inches; reddish brown (2.5YR 4/4) clay loam, dark red (2.5YR 3/6) moist; moderate coarse subangular blocky structure; hard, friable, sticky and plastic; common very fine and few fine roots; few fine and very fine discontinuous pores; few thin clay films on faces of peds and in pores; violently effervescent; few fine filaments or threads of calcium carbonate; moderately alkaline; clear smooth boundary.

Btk2—15 to 24 inches; reddish brown (5YR 5/4) clay loam, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; common very fine and few fine roots; few very fine discontinuous pores; few thin clay films in pores; 5 percent pebbles; violently effervescent; few fine filaments or threads of calcium carbonate; moderately alkaline; clear smooth boundary.

Bk—24 to 33 inches; reddish brown (5YR 5/4) loam, yellowish red (5YR 4/6) moist; weak coarse subangular blocky structure; hard, very friable, slightly sticky and plastic; common very fine and few fine roots; 5 percent pebbles; violently effervescent; few fine filaments or threads of calcium carbonate; moderately alkaline; clear wavy boundary.

Bkb1—33 to 50 inches; reddish brown (5YR 5/4) silty clay loam, dark reddish brown (5YR 3/4) moist; moderate coarse subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; 5 percent pebbles; violently effervescent; few fine filaments and seams of calcium carbonate; moderately alkaline; gradual wavy boundary.

Bkb2—50 to 60 inches; reddish brown (5YR 5/4) silty clay loam, dark reddish brown (5YR 3/4) moist; weak medium and fine subangular blocky structure; slightly hard, very friable, sticky and plastic; few very fine and fine roots; 5 percent pebbles; violently effervescent; fine filaments and seams of calcium carbonate; moderately alkaline.

Calabasas Series

The soils in the Calabasas series are classified as fine-silty, mixed, mesic Ustollic Camborthids. These deep, well drained, moderately slowly permeable soils formed in alluvium derived mainly from limestone and siltstone. They are on bajadas and in adjacent swales. Slope is 0 to 4 percent. Elevation is 4,900 to 6,300 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 150 to 180 days.

Typical pedon of a Calabasas clay loam in an area of Calabasas association, 0 to 4 percent slopes; about 21 miles south of Claunch and 2 miles northeast of Brokenback Crater; 1,550 feet west and 1,325 feet north of the southeast corner of sec. 30, T. 5 S., R. 9 E.

A—0 to 6 inches; pale brown (10YR 6/3) clay loam, dark brown (10YR 3/3) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw—6 to 18 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure parting to moderate medium subangular blocky; slightly hard, friable, sticky and plastic; many very fine and fine roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

Bk—18 to 34 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; violently effervescent; few fine irregular filaments or threads of calcium carbonate; mildly alkaline; diffuse smooth boundary.

C—34 to 60 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; violently effervescent; disseminated calcium carbonate; moderately alkaline.

Clay content of the profile ranges from 18 to 30 percent. Calcium carbonate equivalent ranges from 15 percent to about 35 percent.

The A horizon has value of 5 or 6 when dry.

The B horizon has chroma of 3 or 4 when dry or moist. Texture is silt loam, clay loam, or silty clay loam.

The C horizon has hue of 7.5YR or 10YR, and it has value of 5 or 6 when dry or moist. Texture is loam or silty clay loam.

Caliza Series

The soils in the Caliza series are classified as sandy-skeletal, mixed, thermic Typic Calciorthids. These deep, well drained, moderately rapidly permeable soils formed in alluvium and colluvium derived dominantly from rhyolitic tuff and lava. They are on fan terraces and bajadas. Slope is 1 to 50 percent. Elevation is 4,500 to 5,500 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Caliza very gravelly sandy loam in an area of Nickel-Caliza very gravelly sandy loams, 1 to 30 percent slopes; about 5 miles southeast of San Acacia, on the Sevilleta National Wildlife Refuge; 550 feet north and 2,125 feet east of the southwest corner of sec. 15, T. 1 S., R. 1 E. (projected).

A—0 to 3 inches; brown (10YR 5/3) very gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; moderate very fine granular structure; soft, very friable, nonsticky and slightly plastic; common fine and very fine roots; 55 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

Bk1—3 to 10 inches; pale brown (10YR 6/3) very gravelly coarse sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and slightly plastic; few coarse and fine roots; 55 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

Bk2—10 to 17 inches; pale brown (10YR 6/3) very gravelly coarse sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; 55 percent pebbles; violently effervescent; disseminated calcium carbonate; strongly alkaline; gradual wavy boundary.

2Bk3—17 to 28 inches; pale brown (10YR 6/3) extremely gravelly loamy coarse sand, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; 65 percent pebbles; violently effervescent; disseminated calcium carbonate; strongly alkaline; gradual wavy boundary.

2Bk4—28 to 60 inches; pale brown (10YR 6/3) extremely gravelly loamy coarse sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; 65 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The profile is 35 to 75 percent rock fragments, mainly pebbles. Calcium carbonate equivalent ranges from 15 to 40 percent.

The A horizon has hue of 7.5YR or 10YR, value of 5 or 6 when dry and 3 to 5 when moist, and chroma of 3 or 4 when dry. It is very gravelly loamy coarse sand, very gravelly sandy loam, or very stony sandy loam.

The Bk horizon has hue of 7.5YR or 10YR, value of 5 or 7 when dry and 4 or 5 when moist, and chroma of 3 or 4 when moist or dry. Texture of the fine earth fraction is coarse sandy loam, coarse sand, or loamy coarse sand.

The C horizon, where present has hue of 5YR or 7.5YR, value of 5 or 6 when dry and 4 or 5 when moist, and chroma of 4 to 6 when dry or moist. Texture of the fine earth fraction is coarse sand or loamy coarse sand.

Caliza Variant

The soils in the Caliza Variant are classified as fine-loamy over sandy or sandy-skeletal, mixed, thermic Typic Camborthids. These deep, well drained, moderately permeable soils formed in alluvium derived mainly from river deposits and rhyolite. They are on alluvial fans and arroyo flood plains. Slope is 1 to 5 percent. Elevation is 4,600 to 4,800 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Caliza Variant gravelly loamy sand in an area of Caliza Variant-Urban land complex, 1 to 5 percent slopes; west of the flood control diversion in the city of Socorro; 1,950 feet west and 1,675 feet south of the northeast corner of sec. 35, T. 2 S., R. 1 W. (projected onto currently unsurveyed Socorro Grant).

A—0 to 2 inches; brown (7.5YR 5/4) gravelly loamy sand, dark brown (7.5YR 3/4) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; 20 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

Bw—2 to 5 inches; brown (7.5YR 4/4) sandy loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few fine and common very fine roots; 10 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

Bk1—5 to 11 inches; brown (7.5YR 5/4) gravelly sandy clay loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few medium and fine roots and common very fine roots; 30 percent pebbles; violently effervescent; calcium carbonate coating underside of rock fragments and disseminated throughout soil matrix; moderately alkaline; clear wavy boundary.

Bk2—11 to 15 inches; light brown (7.5YR 6/4) gravelly sandy clay loam, brown (7.5YR 4/4) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few medium and fine roots and common very fine roots; 20 percent pebbles; violently effervescent; calcium carbonate coating underside of rock fragments and disseminated throughout soil matrix; moderately alkaline; clear smooth boundary.

Bk3—15 to 28 inches; light brown (7.5YR 6/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate coarse subangular blocky structure; hard, firm, slightly sticky and plastic; few fine and common very fine roots; 10 percent pebbles; violently effervescent; calcium carbonate segregated in common medium irregularly shaped soft masses; moderately alkaline; clear wavy boundary.

2C1—28 to 34 inches; light brown (7.5YR 6/4) very gravelly coarse sand, brown (7.5YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few fine and very fine roots; 40 percent pebbles; strongly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

2C2—34 to 60 inches; light brown (7.5YR 6/4) very gravelly loamy sand, brown (7.5YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine and very fine roots; 45 percent pebbles and 5 percent cobbles; violently effervescent; disseminated calcium carbonate; mildly alkaline.

Depth to contrasting material ranges from about 20 to 29 inches.

The B horizon has value of 4 to 6 when dry and 3 or 4 when moist, and it has chroma of 4 when dry or moist. Texture is gravelly sandy clay loam, sandy clay loam, and heavy sandy loam. Calcium carbonate equivalent ranges from 4 to 13 percent.

The C horizon has value of 5 or 6 when dry. Texture is very gravelly coarse sand, very gravelly loamy sand, loamy coarse sand, and coarse sand. The horizon is 35 to 45 percent pebbles and 0 to 10 percent cobbles.

Campana Series

The soils in the Campana series are classified as fine-loamy, mixed, thermic Calcic Gypsiorthids. These deep, well drained, moderately permeable soils formed mainly in alluvium derived from limestone, gypsum, and sandstone. They are on fan terraces and in swales. Slope is 1 to 6 percent. Elevation is 4,700 to 5,700 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Campana loamy fine sand in an area of Campana-Yesum association, 1 to 6 percent slopes; about 17 miles northeast of San Antonio; 342 feet north and 450 feet east of the southwest corner of sec. 25, T. 3 S., R. 3 E.

A—0 to 3 inches; brown (7.5YR 5/4) loamy fine sand, dark brown (7.5YR 3/4) moist; weak thick platy structure parting to weak very fine granular; soft, very friable, slightly sticky and nonplastic; few very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

BA—3 to 8 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few medium, common fine, and many very fine roots; few very fine vesicular pores; 5 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk1—8 to 15 inches; brown (7.5YR 5/4) loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few medium and fine roots and many very fine roots; few very fine discontinuous tubular pores; 5 percent pebbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated in few fine irregularly shaped seams; moderately alkaline; clear wavy boundary.

Bk2—15 to 28 inches; light brown (7.5YR 6/4) heavy loam, brown (7.5YR 5/4) moist; weak medium and coarse subangular blocky structure; hard, friable, sticky and plastic; few fine and common very fine roots; few very fine discontinuous tubular pores; 5 percent pebbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated in common fine and medium irregularly shaped soft masses; moderately alkaline; clear wavy boundary.

Bk3—28 to 32 inches; light reddish brown (5YR 6/4) loam, reddish brown (5YR 5/4) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; few fine and common very fine roots; common very fine discontinuous tubular pores; 5 percent pebbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated in few fine irregularly shaped seams; moderately alkaline; abrupt smooth boundary.

By1—32 to 37 inches; pink (5YR 7/4) loam, light reddish brown (5YR 6/4) moist; weak coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine and very fine vesicular pores; disseminated secondary gypsum and secondary gypsum segregated in common medium irregularly shaped soft masses; violently effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

By2—37 to 48 inches; light reddish brown (5YR 6/4) sandy loam, reddish brown (5YR 5/4) moist; weak coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; no roots evident; few very fine vesicular pores; 5 percent pebbles; disseminated secondary gypsum and secondary gypsum segregated in common fine irregularly shaped seams and as pendants on the underside of rock fragments; strongly effervescent; disseminated calcium carbonate; mildly alkaline; gradual smooth boundary.

BCy—48 to 60 inches; reddish brown (5YR 5/4) fine sandy loam, reddish brown (5YR 4/4) moist; some parts are massive and other parts have weak coarse subangular blocky structure; hard, friable, slightly sticky and nonplastic; no roots evident; few very fine vesicular pores; 5 percent pebbles; secondary gypsum segregated in few fine irregularly shaped seams and as pendants on the underside of rock fragments; strongly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

Depth to the calcic horizon is 2 to 8 inches. Depth to the gypsic horizon is 20 to 40 inches.

Cascajo Series

The soils in the Cascajo series are classified as sandy-skeletal, mixed, mesic Ustollic Calciorthids. These deep, excessively drained, rapidly permeable soils formed in gravelly alluvium. They are on hills and knolls. Slope is 15 to 30 percent. Elevation is 5,400 to 7,400 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 56 degrees F, and the frost-free period is 150 to 170 days.

Typical pedon of Cascajo very gravelly sandy loam, 15 to 30 percent slopes; about 37 miles northwest of Magdalena; 1,420 feet east and 1,200 feet south of the northwest corner of sec. 25, T. 4 N., R. 8 W.

A—0 to 2 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and slightly plastic; few fine roots; 25 percent pebbles and 10 percent cobbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

Bw—2 to 9 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; weak very fine subangular blocky structure; soft, friable, nonsticky and nonplastic; common very fine roots; 25 percent pebbles and 10 percent cobbles; strongly effervescent; calcium carbonate coatings on the underside of rock fragments; mildly alkaline; clear wavy boundary.

Bk1—9 to 17 inches; very pale brown (10YR 7/4) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; 30 percent pebbles and 5 percent cobbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on the underside of rock fragments; mildly alkaline; clear smooth boundary.

Bk2—17 to 29 inches; light yellowish brown (10YR 6/4) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; common very fine roots; 45 percent pebbles and 10 percent cobbles; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; mildly alkaline; abrupt smooth boundary.

Bk3—29 to 60 inches; light yellowish brown (10YR 6/4) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few fine roots; 45 percent pebbles and 5 percent cobbles; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; mildly alkaline.

Depth to the Bk2 horizon ranges from 11 to 21 inches. The 10- to 40-inch control section averages 35 to 60 percent rock fragments.

The Bw horizon has hue of 7.5YR or 10YR, value of 5 or 6 when dry and 4 or 5 when moist, and chroma of 2 to 4 when dry or moist.

The Bk horizon has hue of 7.5YR or 10YR, value of 6 to 8 when dry and 5 to 7 when moist, and chroma of 2 to 4 when dry or moist.

The C horizon has hue of 7.5YR or 10YR, value of 6 to 8 when dry and 5 to 7 when moist, and chroma of 2 to 4 when dry or moist. Texture is very gravelly loamy sand or very gravelly sand.

Claunch Series

The soils in the Claunch series are classified as fine-loamy, mixed, mesic Calcic Gypsiorthids. These deep, well drained, moderately permeable soils formed in alluvium derived mainly from gypsum and limestone. They are on fan terraces. Slope is 2 to 6 percent. Elevation is 5,500 to 6,500 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 53 to 57 degrees F, and the frost-free period is 150 to 180 days.

Typical pedon of a Claunch fine sandy loam in an area of Netoma-Claunch association, 2 to 10 percent slopes; about 12 miles north of Bingham; 2,310 feet west and 1,330 feet south of the northeast corner of sec. 27, T. 3 S., R. 6 E.

A—0 to 2 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 4/4) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt wavy boundary.

Bk1—2 to 18 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 5/4) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and plastic; common very fine roots; strongly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

Bk2—18 to 28 inches; pink (7.5YR 7/4) loam, light brown (7.5YR 6/4) moist; moderate fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common fine roots; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated in common fine irregularly shaped soft masses; moderately alkaline; abrupt smooth boundary.

By—28 to 36 inches; pink (7.5YR 8/4) loam, light brown (7.5YR 6/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; few fine and very fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; gradual wavy boundary.

BCy—36 to 51 inches; pink (7.5YR 8/4) loam, pink (7.5YR 7/4) moist; massive; slightly hard, firm, slightly sticky and plastic; slightly effervescent; disseminated calcium carbonate; 5 percent pebbles; mildly alkaline; clear smooth boundary.

C—51 to 60 inches; reddish brown (5YR 5/4) sandy loam, reddish brown (5YR 4/4) moist; massive; slightly hard, friable, nonsticky and slightly plastic; slightly effervescent; disseminated calcium carbonate; 5 percent pebbles; mildly alkaline.

The sum of carbonates and gypsum in the 10- to 40-inch control section averages more than 40 percent by weight. Depth to the calcic horizon is 9 to 17 inches.

Depth to the gypsic horizon is 15 to 31 inches. Percent gypsum in the gypsic horizon is 30 to 45 percent by weight. Salinity ranges from 4 to 8 millimhos per centimeter.

Clovis Series

The soils in the Clovis series are classified as fine-loamy, mixed, mesic Ustollic Haplargids. These deep, well drained, moderately permeable soils formed mainly in alluvium. They are on plains, bajadas, and fan terraces. Slope is 1 to 10 percent. Elevation is 5,200 to 7,000 feet. The average annual precipitation is 10 to 15 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 145 to 180 days.

Typical pedon of a Clovis fine sandy loam in an area of Penistaja-Clovis fine sandy loams, 1 to 8 percent slopes; about 3 miles southeast of Gran Quivira; 1,125 feet east and 275 feet north of the southwest corner of sec. 14, R. 1 S., R. 8 E.

A—0 to 4 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 3/4) moist; moderate medium platy structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; moderately alkaline; clear smooth boundary.

Bt1—4 to 12 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate coarse subangular blocky; hard, firm, slightly sticky and plastic; common very fine and few fine roots; few thin clay films in pores and as bridges; moderately alkaline; clear smooth boundary.

Bt2—12 to 19 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate coarse subangular blocky structure; hard, firm, slightly sticky and plastic; common very fine and few fine roots; few thin clay films in pores and as bridges; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bt3—19 to 30 inches; light brown (7.5YR 6/4) sandy clay loam, brown (7.5YR 5/4) moist; moderate coarse subangular blocky structure; hard, firm, slightly sticky and plastic; common very fine and few fine roots; few thin clay films in pores and as bridges; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk1—30 to 42 inches; pinkish white (7.5YR 8/2) sandy clay loam, pink (7.5YR 7/4) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and plastic; common very fine and fine roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk2—42 to 60 inches; pink (7.5YR 7/4) clay loam, brown (7.5YR 5/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine, fine, and medium roots; violently effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has hue of 5YR or 7.5YR, and it has value of 3 or 4 when moist. Texture is fine sand, fine sandy loam, or sandy loam.

The Bt horizon has hue of 5YR or 7.5YR, value of 4 to 6 when dry or 4 to 6 moist, and chroma of 4 to 6 when dry or moist. Texture is loam, clay loam, or sandy clay loam.

The Bk horizon has hue of 7.5YR or 5YR, value of 6 to 8 when dry and 5 to 7 when moist, and chroma of 3 or 4 when dry or moist. The calcium carbonate equivalent ranges from 15 to 30 percent. Texture is sandy loam, fine sandy loam, loam, sandy clay loam, gravelly sandy clay loam, or clay loam.

Courthouse Variant

The soils in the Courthouse Variant are classified as loamy-skeletal, mixed (calcareous), thermic Lithic Torriorthents. These very shallow and shallow, well drained, moderately permeable soils formed in alluvium derived mainly from sandstone. They are on dip slopes of cuestas and hogbacks. Slope is 5 to 45 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Courthouse Variant very gravelly fine sandy loam in an area of Elbutte-Courthouse Variant-Rock outcrop complex, 5 to 45 percent slopes; about 6 miles east of San Antonio; 100 feet north and 3,400 feet east of the southwest corner of sec. 8, T. 5 S., R. 2 E.

A—0 to 2 inches; light yellowish brown (10YR 6/4) very gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak thin platy structure parting to moderate very fine granular; soft, very friable, slightly sticky and nonplastic; 45 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk—2 to 7 inches; pale brown (10YR 6/3) very cobbly sandy clay loam, yellowish brown (10YR 5/4) moist; moderate fine granular structure; soft, friable, sticky and plastic; 30 percent pebbles and 25 percent cobbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; moderately alkaline; abrupt wavy boundary.

R—7 inches; hard sandstone with calcium carbonate coatings on the bedding planes and in cracks.

Depth to sandstone ranges from 4 to 20 inches. Calcium carbonate equivalent ranges from 5 to 15 percent. Total rock fragment content ranges from 35 to 60 percent.

The A and Bk horizons have hue of 7.5YR or 10YR, value of 4 to 6 when dry and 3 to 5 when moist, and chroma of 4 when dry and 3 or 4 when moist.

The Bk horizon is very cobbly sandy clay loam or very cobbly loam. Clay content ranges from 20 to 35 percent.

Creel Series

The soils in the Creel series are classified as fine-loamy, mixed, mesic Ustollic Calciorthids. These moderately deep, well drained, moderately permeable soils formed in alluvium derived mainly from siltstone and sandstone. They are on mesas, knolls, cuestas, and hills. Slope is 1 to 25 percent. Elevation is 5,600 to 6,600 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 52 to 57 degrees F, and the frost-free period is 160 to 180 days.

Typical pedon of a Creel channery loam in an area of Creel-Musofare-Clovis complex, 1 to 15 percent slopes; about 17 miles northeast of Socorro; 1,770 feet east and 825 feet north of the southwest corner of sec. 5, T. 1 S., R. 4 E.

A—0 to 3 inches; brown (7.5YR 5/4) channery loam, dark brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; 15 percent channery fragments; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt wavy boundary.

Bk1—3 to 10 inches; light brown (7.5YR 6/4) channery loam, dark brown (7.5YR 4/4) moist; moderate very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few fine discontinuous pores; 15 percent channery fragments and 5 percent flagstones; strongly effervescent; calcium carbonate as few fine concretions and as coatingson the underside of rock fragments; moderately alkaline; abrupt wavy boundary.

Bk2—10 to 16 inches; pink (7.5YR 8/4) channery loam, pink (7.5YR 7/4) moist; weak fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few fine and very fine roots; common fine and very fine tubular pores; 20 percent channery fragments; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments and as common medium soft masses and concretions; moderately alkaline; clear smooth boundary.

Bk3—16 to 23 inches; pink (7.5YR 8/4) channery fine sandy loam, light brown (7.5YR 6/4) moist; weak very fine subangular blocky structure; hard, firm, nonsticky and slightly plastic; few very fine roots; few very fine irregular pores; 25 percent channery fragments; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as common medium concretions; moderately alkaline; abrupt smooth boundary.

2Cr—23 to 31 inches; light brown (7.5YR 6/4) soft sandstone, brown (7.5YR 5/4) moist; strata are platy, 0.25 to 0.50 inch thick by 1 to 2 inches long; few very fine roots are matted along the surface of the contact; abrupt smooth boundary.

3R—31 inches; very pale brown (10YR 7/3) hard sandstone.

Depth to the sandstone ranges from 20 to 40 inches.

The A horizon has hue of 7.5YR or 5YR, and it has value of 3 or 4 when moist. Rock fragment content ranges from 15 to 40 percent.

The Bk horizon has hue of 7.5YR or 5YR, value of 5 to 8 when dry and 4 to 7 when moist, and chroma of 4 to 6 when moist or dry. Rock fragment content ranges from 15 to 25 percent. Texture of the fine earth fraction is loam or fine sandy loam, and the clay content ranges from 18 to 24 percent.

Cuate Series

The soils in the Cuate series are classified as loamy-skeletal, carbonatic, mesic Aridic Calciustolls. These moderately deep, well drained, moderately permeable soils formed in colluvium and alluvium derived mainly from limestone. They are on hills and knolls. Slope is 2 to 60 percent. Elevation is 6,100 to 6,800 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 50 to 54 degrees F, and the frost-free period is 150 to 170 days.

Typical pedon of a Cuate very channery loam in an area of Cuate-Tanbark complex, 2 to 15 percent slopes; about 10 miles northeast of Bingham; 1,450 feet north and 2,025 feet east of the southwest corner of sec. 26, T. 3 S., R. 7 E.

A—0 to 1 inch; dark brown (10YR 4/3) very channery loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft very friable, slightly sticky and slightly plastic; common very fine roots; 5 percent flagstones and 35 percent channery fragments; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

Bk1—1 to 9 inches; dark brown (10YR 4/3) very channery loam, dark brown (10YR 3/3) moist; moderate fine and very fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; 10 percent flagstones and 25 percent channery fragments; strongly effervescent; disseminated calcium carbonate; mildly alkaline; gradual wavy boundary.

Bk2—9 to 23 inches; pale brown (10YR 6/3) very channery loam, brown (10YR 5/3) moist; weak very fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common medium and very fine roots; 5 percent flagstones and 30 percent channery fragments; strongly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

Bk3—23 to 26 inches; white (10YR 8/2) channery sandy loam, light gray (10YR 7/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; 5 percent flagstones and 25 percent channery fragments; violently effervescent; disseminated calcium carbonate; mildly alkaline; abrupt wavy boundary.

Bk4—26 to 32 inches; white (10YR 8/2) very channery sandy loam, light gray (10YR 7/2) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; 10 percent flagstones and 30 percent channery fragments; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as pendants on coarse fragments; moderately alkaline; abrupt smooth boundary.

2R—32 inches; limestone.

Thickness of the mollic epipedon ranges from 7 to 13 inches. Depth to bedrock ranges from 20 to 40 inches.

The A horizon has value of 4 or 5 when dry, and it has chroma of 2 or 3 when dry or moist. Rock fragment content ranges from 35 to 45 percent.

The B horizon has hue of 7.5YR or 10YR, value of 4 to 8 when dry and 3 to 7 when moist, and chroma of 2 to 4 when dry or moist. Rock fragment content ranges from 35 to 60 percent, and the fine earth fraction is loam or sandy loam. Calcium carbonate equivalent ranges from 40 to 50 percent.

Datil Series

The soils in the Datil series are classified as fine-loamy, mixed, mesic Aridic Argiustolls. These deep, well drained, moderately permeable soils formed in alluvium. They are on fan terraces, bajadas, and dissected hills and ridges. Slope is 3 to 25 percent. Elevation is 6,100 to 7,600 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of a Datil loam in an area of Loarc-Datil-Majada association, 2 to 12 percent slopes; about 15 miles west and 28 miles north of Magdalena; 550 feet east and 750 feet south of the northwest corner of sec. 29, T. 2 N., R. 8 W. (projected).

A—0 to 3 inches; brown (7.5YR 4/2) loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine roots; mildly alkaline; abrupt smooth boundary.

Bw—3 to 7 inches; brown (7.5YR 4/2) loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; mildly alkaline; clear wavy boundary.

Bt—7 to 10 inches; brown (7.5YR 4/2) gravelly clay loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; few fine and common very fine roots; few thin clay films in pores and on sand grains; 15 percent pebbles; mildly alkaline; abrupt wavy boundary.

Btk—10 to 22 inches; brown (7.5YR 4/4) gravelly clay loam, brown (7.5YR 4/4) moist; moderate coarse prismatic structure parting to strong medium subangular blocky; hard, very firm, sticky and plastic; few fine and common very fine roots; common thin clay films on faces of peds and on sand grains; 20 percent pebbles; slightly effervescent; common medium masses of calcium carbonate and segregated a few small concretions of calcium carbonate; mildly alkaline; clear wavy boundary.

Bk1—22 to 40 inches; pinkish gray (7.5YR 6/2) loam, brown (7.5YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; abrupt wavy boundary.

Bk2—40 to 60 inches; pinkish gray (7.5YR 7/2) gravelly sandy clay loam, brown (7.5YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; about 30 percent pebbles; violently effervescent; disseminated calcium carbonate; mildly alkaline.

The mollic epipedon is 7 to 12 inches thick.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5 when dry and 2 or 3 when moist, and chroma of 2 to 4 when dry and 2 or 3 when moist. It is loam, sandy loam, or gravelly loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 3 to 5 when dry and 3 or 4 when moist, and chroma of 2 to 4 when dry or moist. It is clay loam, gravelly clay loam, loam, or gravelly sandy clay loam. Rock fragment content ranges from 5 to 30 percent.

The Bk horizon has hue of 7.5YR or 10YR, value of 6 to 8 when dry and 5 to 7 when moist, and chroma of 2 to 4. It is gravelly loam, loam, or gravelly sandy clay loam. Calcium carbonate equivalent ranges from 15 to 35 percent.

Deama Series

The soils in the Deama series are classified as loamy-skeletal, carbonatic, mesic Lithic Calciustolls. These very shallow and shallow, well drained, moderately permeable soils formed in alluvium derived mainly from limestone. They are on canyons, knolls, ridges, hogbacks, cuestas, and hills. Slope is 3 to 60 percent. Elevation is 5,500 to 7,700 feet. The average annual precipitation is 10 to 15 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 140 to 180 days.

Typical pedon of a Deama very channery loam in an area of Cuate-Deama-Tanbark complex, 15 to 60 percent slopes; about 18 miles south of Gran Quivira; 2,400 feet west and 2,500 feet south of the northwest corner of sec. 5, T. 4 S., R. 8 E.

A1—0 to 2 inches; brown (10YR 5/3) very channery loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable,slightly sticky and nonplastic; common very fine and few fine roots; 40 percent channery fragments and 5 percent flagstones; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

A2—2 to 7 inches; brown (10YR 5/3) very channery loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; 40 percent channery fragments and 5 percent flagstones; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk1—7 to 10 inches; pale brown (10YR 6/3) very channery loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common fine and medium roots and few very fine roots; 30 percent channery fragments and 10 percent flagstones; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk2—10 to 18 inches; light gray (10YR 7/2) very channery loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; hard, firm, slightly sticky and nonplastic; common very fine and fine roots and few medium roots; 30 percent channery fragments and 15 percent flagstones; violently effervescent; disseminated calcium carbonate; moderately alkaline; abrupt wavy boundary.

R—18 inches; limestone.

The calcium carbonate equivalent ranges from 30 to 75 percent but averages more than 40 percent.

Depth to bedrock ranges from 6 to 20 inches.

The A horizon has value of 4 or 5 when dry, and it has chroma of 2 or 3 when moist. It is very stony loam, extremely gravelly sandy loam, or very channery loam.

The Bk horizon has value of 4 to 7 when dry and 3 to 6 when moist, and it has chroma of 2 to 4 when moist or dry. It is very gravelly loam, very channery loam, or very flaggy loam.

Dean Series

The soils in the Dean series are classified as fine-loamy, carbonatic, mesic Ustollic Calciorthids. These deep, well drained, moderately slowly permeable soils formed in alluvium derived mainly from limestone. They are on fan terraces, bajadas, and knolls. Slope is 1 to 10 percent. Elevation is 5,300 to 6,600 feet. The average annual precipitation is 10 to 15 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 150 to 180 days.

Typical pedon of a Dean gravelly fine sandy loam in an area Harvey-Dean association, 1 to 9 percent slopes; about 3 miles southwest of Claunch; 3,850 feet north and 250 feet east of the southwest corner of sec. 19, T. 2 S., R. 9 E.

A—0 to 4 inches; light brown (7.5YR 6/4) gravelly fine sandy loam, brown (7.5YR 5/4) moist; weak thin platy structure parting to weak very fine granular; soft, very friable, slightly sticky and slightly plastic; few fine and very fine roots; few very fine vesicular pores; 20 percent limestone pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bw—4 to 18 inches; light brown (7.5YR 6/4) gravelly sandy clay loam, brown (7.5YR 5/4) moist; weak coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine and common very fine roots; few fine and very fine tubular pores; 20 percent limestone pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk1—18 to 38 inches; pinkish white (7.5YR 8/2) gravelly loam, pink (7.5YR 7/4) moist; moderate thick platy structure; hard, firm, sticky and slightly plastic; few fine and very fine roots; few very fine interstitial pores; weak continuous cementation caused by calcium carbonate; 25 percent limestone pebbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatingson pebbles; moderately alkaline; clear wavy boundary.

Bk2—38 to 52 inches; pinkish white (7.5YR 8/2) gravelly loam, pink (7.5YR 7/4) moist; moderate coarse subangular blocky structure; very hard, very firm, sticky and plastic; few fine and very fine roots; few very fine interstitial pores; weak continuous cementation caused by calcium carbonate; 25 percent limestone pebbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatingson pebbles; moderately alkaline; clear wavy boundary.

Bk3—52 to 58 inches; pink (7.5YR 7/4) gravelly loam, reddish yellow (7.5YR 6/6) moist; weak coarse and moderate medium subangular blocky structure; hard, friable, sticky and slightly plastic; few fine and very fine roots; common very fine interstitial and tubular pores; 20 percent limestone pebbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated in few fine seams and threads; moderately alkaline; clear wavy boundary.

CB—58 to 60 inches; light brown (7.5YR 6/4) sandy clay loam, strong brown (7.5YR 5/6) moist; dominantly massive but some pockets have weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; common very fine interstitial and tubular pores; 10 percent limestone pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has hue of 7.5YR or 10YR, value of 5 or 6 when dry and 4 or 5 when moist, and chroma of 3 or 4 when dry or moist. Texture of the fine earth fraction is fine sandy loam or loam. Rock fragment content ranges from 20 to 30 percent.

The Bw horizon has hue of 7.5YR or 10YR, value of 6 or 7 when dry and 4 or 5 when moist, and chroma of 3 or 4 when dry. Texture of the fine earth fraction is sandy clay loam or loam. Rock fragment content ranges from 15 to 30 percent.

The Bk horizon has hue of 7.5YR or 10YR, value of 7 or 8 when dry and 6 or 7 when moist, and chroma of 0 to 4 when dry and 4 to 6 when moist. Texture of the fine earth fraction is loam, clay loam, or sandy clay loam. Rock fragment content ranges from 15 to 35 percent.

The C horizon has value of 6 or 7 when dry, and it has chroma of 4 or 6 when moist. Rock fragment content ranges from 10 to 30 percent. Texture of the fine earth fraction is loam, clay loam, or sandy clay loam. Gypsum content ranges from 0 to 5 percent.

Deltajo Series

The soils in the Deltajo series are classified as fine-loamy, mixed, thermic Typic Calciorthids. These moderately deep, well drained, moderately permeable soils formed in alluvium derived mainly from siltstone. They are on cuestas. Slope is 5 to 45 percent. Elevation is 5,000 to 5,700 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Deltajo very channery loam, 5 to 45 percent slopes; about 12 miles northeast of Socorro and 1 mile north of Canoncito de la Uva; 250 feet north and 150 feet east from center of sec. 3, T. 2 S., R. 2 E.

A—0 to 2 inches; reddish brown (5YR 4/4) very channery loam, dark reddish brown (5YR 3/4) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; few fine and very fine roots; few very fine vesicular pores; 40 percent channery fragments and 5 percent flagstones; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk1—2 to 6 inches; reddish brown (5YR 5/4) channery loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few fine and many very fine roots; few very fine vesicular pores; 25 percent channery fragments; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated in few fine filaments lining pores; moderately alkaline; clear smooth boundary.

Bk2—6 to 13 inches; light reddish brown (5YR 6/4) channery loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few fine and common very fine roots; few very fine discontinuous irregularly shaped pores; 20 percent channery fragments; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on the underside of rock fragments and as few fine irregularly shaped soft masses; moderately alkaline; clear wavy boundary.

C—13 to 22 inches; reddish brown (2.5YR 5/4) channery silt loam, reddish brown (2.5YR 4/4) moist; massive, platy rock structure inherited from underlying parent material; slightly hard, friable, sticky and plastic; few fine and very fine roots; 20 percent channery fragments; slightly effervescent; calcium carbonate segregated in few fine irregularly shaped soft masses; moderately alkaline; clear wavy boundary.

2Cr—22 to 33 inches; reddish brown (5YR 4/3) soft siltstone, dark reddish brown (5YR 3/3) moist; strata are about 0.5 inch thick and contain no plant roots; clear smooth boundary.

3R—33 inches; light gray (10YR 7/1) fine grained calcareous sandstone; as depth increases this stratum grades into, and is interbedded with, softer siltstone strata.

Depth to soft siltstone ranges from 20 to 40 inches. Calcium carbonate equivalent in the calcic horizon is 15 to 35 percent. Clay content of the profile ranges from 18 to 27 percent.

Dioxice Series

The soils in the Dioxice series are classified as fine-loamy, mixed, mesic Aridic Calciustolls. These deep, well drained, moderately permeable soils formed in alluvium derived from volcanic rock. They are on fan terraces and bajadas. Slope is 1 to 4 percent. Elevation is 6,300 to 7,500 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of a Dioxice loam in an area of Guy-Dioxice-Pena association, 1 to 8 percent slopes; about 23 miles southwest of Magdalena; 3,020 feet east and 100 feet north of the southwest corner of sec. 5, T. 4 S., R. 7 W.

A1—0 to 3 inches; dark brown (7.5YR 4/2) loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; 10 percent pebbles; mildly alkaline; clear smooth boundary.

A2—3 to 8 inches; dark brown (7.5YR 3/2) sandy clay loam, dark brown (7.5YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; 5 percent pebbles; strongly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

Bk1—8 to 12 inches; brown (7.5YR 5/2) sandy clay loam, brown (7.5YR 4/2) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine roots; 5 percent pebbles; violently effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

Bk2—12 to 24 inches; light brown (7.5YR 6/4) sandy clay loam, brown (7.5YR 5/4) moist; moderate fine subangular blocky structure; hard, friable, sticky and slightly plastic; few fine roots; 5 percent cobbles and 5 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk3—24 to 60 inches; pinkish gray (7.5YR 7/2) cobbly loam, pinkish gray (7.5YR 6/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; 10 percent cobbles and 5 percent pebbles; violently effervescent; disseminated calcium carbonate; mildly alkaline.

Rock fragment content ranges from 5 to 20 percent in the calcic horizon. The calcium carbonate equivalent ranges from 15 to 35 percent.

Dona Ana Series

The soils in the Dona Ana series are classified as fine-loamy, mixed, thermic Typic Haplargids. These deep, well drained, moderately permeable soils formed in alluvial and eolian material. They are on fan terraces, plains, and bajadas. Slope is 1 to 5 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Dona Ana sandy loam in an area of Berino-Dona Ana association, 1 to 5 percent slopes; about 12 miles east of San Antonio; 1,825 feet south and 875 feet east from the northwest corner of sec. 20, T. 4 S., R. 3 E.

A—0 to 3 inches; brown (7.5YR 5/4) sandy loam, brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine, fine, and medium roots; strongly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

Bt—3 to 6 inches; brown (7.5YR 5/4) heavy sandy loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; few thin clay films on faces of peds and as bridges; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Btk—6 to 14 inches; light brown (7.5YR 6/4) sandy clay loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; many fine, common very fine, and few medium roots; few thin clay films on faces of peds; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk1—14 to 21 inches; pink (7.5YR 7/4) sandy clay loam, light brown (7.5YR 6/4) moist; massive; hard, firm, sticky and plastic; many very fine and few fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear irregular boundary.

Bk2—21 to 37 inches; pinkish white (7.5YR 8/2) loam, pink (7.5YR 7/4) moist; massive; hard, firm, slightly sticky and nonplastic; few very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk3—37 to 45 inches; pinkish white (7.5YR 8/2) loam, light brown (7.5YR 6/4) moist; massive; very hard, very firm, slightly sticky and nonplastic; few very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk4—45 to 60 inches; pinkish gray (7.5YR 7/2) sandy loam, light brown (7.5YR 6/4) moist; massive; hard, firm, slightly sticky and nonplastic; few very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has hue of 5YR or 7.5YR, and it has value of 3 or 4 when moist. Texture is sandy loam or loamy sand.

The Bt horizon has hue of 5YR or 7.5YR, and it has value of 4 to 6 when dry and 3 to 5 when moist. It is sandy clay loam or sandy loam and is 18 to 35 percent clay.

The Bk horizon has value of 7 or 8 when dry and 5 to 7 when moist, and it has chroma of 2 to 4 when dry. The horizon is sandy loam, fine sandy loam, loam, or sandy clay loam and is 18 to 35 percent clay.

Elbutte Series

The soils in the Elbutte series are classified as clayey, mixed (calcareous), thermic, shallow Typic Torriorthents. These very shallow and shallow, well drained, slowly permeable soils formed in alluvium derived mainly from shale. They are on cuestas, hogbacks, and mesa escarpments. Slope is 5 to 45 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of an Elbutte gravelly clay loam in an area of Elbutte-Courthouse Variant-Rock outcrop complex, 5 to 45 percent slopes; about 8 miles east of San Antonio, near the old Carthage coal mines; 3,000 feet north and 4,600 feet east of the southwest corner of sec. 9, T. 5 S., R. 2 E.

A—0 to 2 inches; pale brown (10YR 6/3) gravelly clay loam, yellowish brown (10YR 5/4) moist; weak thin platy structure parting to moderate very fine granular; soft, very friable, sticky and plastic; few very fine roots; 20 percent pebbles and 10 percent channery fragments of hard sandstone; strongly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

C1—2 to 6 inches; light yellowish brown (10YR 6/4) shaly silty clay loam, light olive brown (2.5Y 5/4) moist; massive; hard, friable, sticky and plastic; few medium roots and common fine and very fine roots; 10 percent hard sandstone pebbles and channery fragments and 25 percent soft shale fragments; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C2—6 to 16 inches; light yellowish brown (2.5Y 6/4) extremely shaly silty clay loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, friable, sticky and plastic; few medium and fine roots and common very fine roots; common to many sand-sized gypsum crystals; 10 percent hard sandstone pebbles and channery fragments and 65 percent soft shale fragments; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

Cr—16 inches; interbedded soft shale and thin, hard sandstone strata that contain no plant roots.

Depth to soft shale or sandstone is 8 to 20 inches. Clay content ranges from 35 to 60 percent. Hard sandstone fragment content ranges from 15 to 30 percent in the A horizon and from 5 to 10 percent in the C horizon. The C horizon has 15 to 70 percent soft shale fragments. The fine earth fraction is clay loam, silty clay loam, or clay.

Flaco Series

The soils in the Flaco series are classified as fine-loamy, mixed, mesic Ustollic Haplargids. These moderately deep, well drained, moderately slowly permeable soils formed in alluvium derived mainly from basalt. They are on mesas and knolls. Slope is 1 to 15 percent. Elevation is 5,700 to 7,300 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 52 to 57 degrees F, and the frost-free period is 140 to 180 days.

Typical pedon of a Flaco fine sandy loam in an area of Socorro-Flaco complex, 2 to 15 percent slopes; about 18 miles northeast of Socorro, on Mesa Redonda; 1,600 feet north and 2,450 feet west of the southeast corner of sec. 32, T. 1 S., R. 4 E.

A—0 to 1 inch; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 3/4) moist; soft, very friable, nonsticky and slightly plastic; few fine roots; 5 percent pebbles; neutral; abrupt smooth boundary.

Bt—1 to 8 inches; dark brown (7.5YR 4/4) clay loam, dark brown (7.5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine roots; few thin clay films on faces of peds; 10 percent pebbles; neutral; abrupt wavy boundary.

Bk1—8 to 15 inches; light brown (7.5YR 6/4) gravelly clay loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; few fine roots; 15 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; gradual smooth boundary.

Bk2—15 to 22 inches; light brown (7.5YR 6/4) gravelly clay loam, brown (7.5YR 5/4) moist; weak fine subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; 15 percent pebbles; strongly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt wavy boundary.

R—22 inches; basalt.

Depth to basalt ranges from 20 to 40 inches.

The A horizon has hue of 7.5YR or 10YR, and it has chroma of 3 or 4 when moist or dry. The fine earth fraction is fine sandy loam or loam. Rock fragment content ranges from 5 to 25 percent.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5 when dry and 3 or 4 when moist, and chroma of 3 or 4 when dry. Rock fragment content ranges from 10 to 15 percent.

The Bk horizon has hue of 7.5YR or 10YR, value of 6 or 7 when dry, and chroma of 3 or 4 when dry or moist. The fine earth fraction is loam or clay loam. Rock fragment content ranges from 15 to 30 percent.

Gabaldon Series

The soils in the Gabaldon series are classified as fine-silty, mixed, mesic Cumulic Haplustolls. These deep, well drained, and moderately permeable soils formed in recent alluvium. They are in swales. Slope is 0 to 2 percent. Elevation is 5,300 to 6,500 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 52 to 57 degrees F, and the frost-free period is 150 to 180 days.

Typical pedon of Gabaldon silt loam, 0 to 2 percent slopes; about 11 miles south and 6 miles west of Claunch; 2,000 feet east and 600 feet north of southwest corner of sec. 11, T. 4 S., R. 9 E.

A—0 to 2 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to weak very fine granular; soft, very friable, sticky and slightly plastic; common very fine and fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw1—2 to 17 inches; grayish brown (10YR 5/2) silty clay loam, dark brown (10YR 3/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

Bw2—17 to 43 inches; grayish brown (10YR 5/2) silty clay loam, dark brown (10YR 3/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and few fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw3—43 to 50 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and few fine roots; violently effervescent; calcium carbonate segregated as few fine irregular filaments or threads; moderately alkaline; clear smooth boundary.

Bw4—50 to 55 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and few fine roots; violently effervescent; calcium carbonate segregated as few fine irregular filaments or threads; moderately alkaline; clear wavy boundary.

C—55 to 60 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; common very fine and few fine roots; violently effervescent; disseminated calcium carbonate; moderately alkaline.

Thickness of the mollic epipedon ranges from 20 to 45 inches.

Gila Series

The soils in the Gila series are classified as coarse-loamy, mixed (calcareous), thermic Typic Torrifluvents. These deep, well drained, moderately permeable soils formed in recent alluvium. They are on the Rio Grande flood plain. Slope is 0 to 2 percent. Elevation is 4,400 to 4,800 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Gila clay loam, 0 to 1 percent slopes; about 5.25 miles north of San Antonio; 625 feet west and 2,125 feet south of the northeast corner of sec. 6, T. 4 S., R. 1 E.

Ap—0 to 14 inches; yellowish brown (10YR 5/4) clay loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; many very fine and common fine roots; many very fine irregular pores; few fine irregular salt crystals; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1—14 to 24 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; many fine irregular pores; few fine irregular salt crystals; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

C2—24 to 29 inches; light yellowish brown (10YR 6/4) sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; many very fine irregular pores; strongly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

C3—29 to 42 inches; very pale brown (10YR 7/4) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine irregular pores; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

C4—42 to 60 inches; very pale brown (10YR 7/4) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; many very fine irregular pores; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

Salinity of the profile ranges from 0 to 8 millimhos per centimenter. The 10- to 40-inch control section averages less than 18 percent clay, and in some pedons it includes strata of contrasting material.

The A horizon has hue of 7.5YR or 10YR, value of 5 or 6 when dry and 3 or 4 when moist, and chroma of 2 to 4 when dry or moist. It is clay loam or fine sandy loam.

The C horizon has hue of 7.5YR or 10YR, value of 4 to 7 when dry and 3 to 5 when moist, and chroma of 3 or 4 when dry or moist. It is stratified very fine sandy loam, silt loam, silty clay loam, sandy loam, sand, and very fine sand.

The Gila soils in this survey area are taxadjunct to the series because the frost-free period is 180 to 210 days and the stratified layers of coarser textured material are more than 1 inch thick in some pedons. These differences, however, do not significantly affect use and management.

Glenberg Series

The soils in the Glenberg series are classified as coarse-loamy, mixed (calcareous), mesic Ustic Torrifluvents. These deep, well drained, moderately rapidly permeable soils formed in recent alluvium. They are on flood plains and in drainageways. Slope is 0 to 5 percent. Elevation is 5,000 to 7,000 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 145 to 180 days.

Typical pedon of a Glenberg sandy loam in an area of Glenberg-Riverwash association, 0 to 5 percent slopes; about 25 miles northwest of Magdalena, in Dog Springs Canyon; 875 feet west and 1,250 feet north of the southwest corner of sec. 36, T. 3 N., R. 8 W.

A—0 to 8 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak medium granular structure; soft, very friable, nonsticky and slightly plastic; few very fine, fine, and medium roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C1—8 to 18 inches; pale brown (10YR 6/3) gravelly loamy sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; common very fine and few fine roots; 30 percent pebbles; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

C2—18 to 27 inches; light brownish gray (10YR 6/2) gravelly sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; 20 percent pebbles; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C3—27 to 36 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine and fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

C4—36 to 52 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

C5—52 to 60 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and slightly plastic; few very fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon is sandy loam or fine sandy loam.

The C horizon is stratified fine sandy loam, gravelly sandy loam, sandy loam, loam, or gravelly loamy sand.

Glendale Series

The soils in the Glendale series are classified as fine-silty, mixed (calcareous), thermic Typic Torrifluvents. These deep, well drained, moderately slowly permeable soils formed in recent alluvium. They are on flood plains and terraces. Slope is 0 to 1 percent. Elevation is 4,400 to 5,100 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Glendale clay loam, occasionally flooded, 0 to 1 percent slopes; about 1 mile north of San Antonio; 1,250 feet west and 2,350 feet south of the northeast corner of sec. 30, T. 4 S., R. 1 E.

Ap—0 to 19 inches; brown (7.5YR 5/4) clay loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; hard, firm, sticky and very plastic; many very fine and common fine roots; many fine and common medium tubular pores; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1—19 to 23 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; hard, firm, sticky and plastic; many very fine and common fine roots; many very fine and few medium tubular pores; common very fine salt crystals; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C2—23 to 35 inches; brown (10YR 5/3) clay loam, very dark grayish brown (10YR 3/2) moist; massive; hard, firm, sticky and plastic; common very fine and few fine roots; many very fine tubular pores; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

C3—35 to 50 inches; light brown (7.5YR 6/4) silty clay loam, brown (7.5YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C4—50 to 54 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 5/4) moist; massive; hard, firm, sticky and plastic; common very fine roots; many very fine and common fine tubular pores; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

C5—54 to 60 inches; pink (7.5YR 7/4) loam, brown (7.5YR 5/4) moist; massive; hard, firm, slightly sticky and slightly plastic; few fine roots; many very fine tubular pores; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has hue of 7.5YR or 10YR, and it has value of 5 or 6 when dry. It is clay loam or sandy loam.

The C horizon has hue of 7.5YR or 10YR, value of 5 to 7 when dry and 3 to 6 when moist, and chroma of 3 or 4 when dry or moist. It is stratified loam, clay loam, silty clay loam, sandy loam, or silt loam.

Salinity ranges from 4 millimhos to more than 16 millimhos per centimeter.

The Glendale soils in this survey area are a taxadjunct to the Glendale series because some pedons have loam that is 15 percent sand that is fine or coarser in texture.

Goldust Series

The soils in the Goldust series are classified as clayey-skeletal, mixed, mesic Aridic Argiustolls. These deep, well drained, slowly permeable soils formed in alluvium derived from rhyolitic tuff and lava. They are on bajadas. Slope is 2 to 8 percent. Elevation is 6,300 to 7,400 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of Goldust gravelly sandy loam, 2 to 8 percent slopes; about 23 miles south of U.S. Highway 60, on New Mexico 52, and 3 miles west; 2,000 feet east and 250 feet south of the northwest corner of sec. 31, T. 7 S., R. 8 W.

A1—0 to 4 inches; brown (7.5YR 5/2) gravelly sandy loam, dark brown (7.5YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots; 20 percent pebbles; neutral; clear smooth boundary.

A2—4 to 12 inches; brown (7.5YR 5/2) very cobbly loam, dark brown (7.5YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common fine and very fine roots; 15 percent pebbles and 20 percent cobbles; neutral; clear smooth boundary.

Bw—12 to 22 inches; brown (7.5YR 5/4) very cobbly loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; 15 percent pebbles and 25 percent cobbles; neutral; abrupt wavy boundary.

Bt1—22 to 29 inches; brown (7.5YR 4/4) very gravelly clay, brown (7.5YR 4/4) moist; strong fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few fine and very fine roots; many moderately thick clay films and cutans on faces of peds; 30 percent pebbles and 15 percent cobbles; mildly alkaline; clear wavy boundary.

Bt2—29 to 35 inches; strong brown (7.5YR 5/6) very gravelly clay, strong brown (7.5YR 4/6) moist; strong fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few fine and very fine roots; many moderately thick clay films and cutans on faces of peds; 30 percent pebbles and 15 percent cobbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

Bk—35 to 60 inches; strong brown (7.5YR 5/6) very gravelly sandy clay, strong brown (7.5YR 4/6) moist; massive; hard, firm, sticky and plastic; few very fine roots; 50 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline.

Thickness of the mollic epipedon ranges from 7 to 12 inches.

Guy Series

The soils in the Guy series are classified as coarse-loamy, mixed, mesic Aridic Calciustolls. These deep, well drained, moderately rapidly permeable soils formed in alluvium derived mainly from rhyolitic tuff and lava. They are on bajadas and fan terraces. Slope is 1 to 6 percent. Elevation is 6,300 to 7,500 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of a Guy sandy loam in an area of Guy-Dioxice-Pena association, 1 to 8 percent slopes; about 35 miles southwest of Magdalena, above Whitewater Canyon; 750 feet west and 2,375 feet north of the southeast corner of sec. 7, T. 7 S., R. 7 W.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots; 10 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

A2—4 to 9 inches; dark brown (10YR 4/3) sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and common fine roots; 10 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

Bw—9 to 14 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; many very fine and common fine roots; 10 percent pebbles and 10 percent cobbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk1—14 to 27 inches; light yellowish brown (10YR 6/4) cobbly sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and common fine roots; 10 percent cobbles and 10 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk2—27 to 60 inches; light brown (7.5YR 6/4) cobbly sandy loam, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; 10 percent cobbles and 10 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline.

Rock fragment content ranges from 10 to 35 percent.

Haploborolls, aridic

Haploborolls, aridic, are extremely variable. These very shallow to deep, well drained to somewhat excessively drained, slowly permeable to rapidly permeable soils formed in colluvium and local alluvium derived from tuff. They are on benches. Slope is 20 to 60 percent. Elevation is 7,500 to 9,200 feet. The average annual precipitation is 10 to 20 inches. The average annual air temperature is 41 to 46 degrees F, and the frost-free period is 80 to 115 days.

Reference pedon of Haploborolls, aridic, cobbly loam in an area of Haploborolls, aridic-Rock outcrop complex, 20 to 60 percent slopes; about 25 miles northwest of Magdalena; 1,790 feet east and 2,375 feet south of the northwest corner of sec. 35, T. 1 N., R. 7 W.

O—2 inches to 0; decomposing plant litter.

A1—0 to 2 inches; dark grayish brown (10YR 4/2) cobbly loam, very dark brown (10YR 2/2) moist; 15 percent cobbles and 10 percent pebbles; abrupt smooth boundary.

A2—2 to 9 inches; dark grayish brown (10YR 4/2) very 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 few medium roots; 5 percent stones and 30 percent pebbles; neutral; gradual irregular boundary.

Bw—9 to 21 inches; dark yellowish brown (10YR 4/4) extremely gravelly sandy clay loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; 70 percent pebbles; neutral; clear smooth boundary.

C—21 to 29 inches; yellowish brown (10YR 5/4) extremely gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine roots; 80 percent pebbles; neutral; abrupt wavy boundary.

R—29 inches; tuff.

Depth to bedrock ranges from 4 to 60 inches. The mollic epipedon ranges from 7 to 14 inches in thickness. The surface layer is 10 to 55 percent rock fragments. The subsoil and substratum are 10 to 80 percent rock fragments.

The O horizon is 0 to 3 inches thick.

The profile is sandy loam to clay in the fine earth fraction.

Harvey Series

The soils in the Harvey series are classified as fine-loamy, mixed, mesic Ustollic Calciorthids. These deep, well drained, moderately permeable soils formed mainly in alluvium. They are on bajadas, fan terraces, and plains and in swales and drainageways. Slope is 1 to 15 percent. Elevation is 5,300 to 6,700 feet. The average annual precipitation is 10 to 15 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 145 to 180 days.

Typical pedon of a Harvey fine sandy loam in an area of Pirodel-Harvey-Pinon complex, 1 to 15 percent slopes; about 6 miles southwest of Gran Quivira; 925 feet west and 2,250 feet north of the southeast corner of sec. 24, T. 1 S., R. 7 E.

A—0 to 3 inches; dark yellowish brown (10YR 4/4) fine sandy loam, dark yellowish brown (10YR 3/4) moist; weak medium platy structure parting to weak very fine granular; soft, very friable, slightly sticky and nonplastic; few very fine and fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

Bw—3 to 12 inches; dark yellowish brown (10YR 4/4) fine sandy loam, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic;

common very fine and fine roots and few medium roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

Bk1—12 to 19 inches; light brown (7.5YR 6/4) sandy clay loam, brown (7.5YR 5/4) moist; moderate coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk2—19 to 31 inches; pinkish gray (7.5YR 7/2) sandy clay loam, brown (7.5YR 5/4) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine, fine, and medium roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk3—31 to 60 inches; light brown (7.5YR 6/4) gravelly sandy clay loam, dark brown (7.5YR 4/4) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; 20 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6 when dry and 3 or 4 when moist, and chroma of 2 to 4 when dry or moist. Texture is fine sandy loam, very fine sandy loam, or loam.

The Bw horizon has hue of 7.5YR or 10YR, value of 4 to 6 when dry and 3 to 5 when moist, and chroma of 3 or 4 when dry or moist. Texture is fine sandy loam, loam, sandy clay loam, or clay loam. Clay content ranges from 18 to 35 percent.

The Bk horizon has value of 6 to 8 when dry and 5 to 7 when moist, and it has chroma of 2 to 4 when dry or moist. Texture is loam, sandy clay loam, or clay loam. Calcium carbonate equivalent ranges from 15 to 35 percent.

The Bk3 horizon has value of 4 or 5 when moist, and it has chroma of 4 to 6 when moist. Texture is gravelly sandy clay loam, clay loam, loam, or fine sandy loam.

Ildecarb Series

The soils in the Ildecarb series are classified as loamy-skeletal, carbonatic, mesic Ustollic Calciorthids. These deep, well drained, moderately slowly permeable to moderately permeable soils formed in alluvium derived mainly from limestone, siltstone, and gypsum. They are on fan terraces and bajadas. Slope is 1 to 10 percent. Elevation is 5,300 to 6,700 feet. The average annual precipitation is 10 to 15 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 150 to 180 days.

Typical pedon of an Ildecarb gravelly loam in an area of Ildecarb-Dean gravelly loams, 1 to 10 percent slopes; 5 miles east of Bingham; 225 feet north and 820 feet west of cap marking the SE1/4SE1/4 of sec. 36, T. 4 S., R. 6 E.

A—0 to 4 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; few fine and common very fine roots; 25 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw—4 to 16 inches; pale brown (10YR 6/3) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few medium and common fine and very fine roots; 25 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk1—16 to 24 inches; white (10YR 8/2) very gravelly sandy loam, very pale brown (10YR 7/3) moist; weak coarse and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few medium and common fine and very fine roots; 35 percent pebbles and 5 percent cobbles; disseminated gypsum; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; moderately alkaline; gradual wavy boundary.

Bk2—24 to 48 inches; white (10YR 8/1) extremely gravelly loam, very pale brown (10YR 7/3) moist; weak medium and coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few medium and common fine and very fine roots; 30 percent pebbles, 20 percent channery fragments, 10 percent cobbles, and 5 percent stones; disseminated gypsum; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; moderately alkaline; clear wavy boundary.

C—48 to 60 inches; pink (7.5YR 7/4) extremely gravelly clay loam, brown (7.5YR 5/4) moist; massive; slightly hard, friable, sticky and plastic; few fine and common very fine roots; 40 percent pebbles, 15 percent channery fragments, and 10 percent cobbles; common gypsum crystals; violently effervescent; disseminated calcium carbonate; moderately alkaline.

Depth to the calcic horizon is 3 to 26 inches.

The calcium carbonate equivalent in the fine earth fraction of the control section ranges from 40 to 90 percent.

The gypsum content of the fine earth fraction of the control section ranges from 5 to 20 percent, and there is no horizon of secondary accumulation.

The A horizon has hue of 7.5YR or 10YR, value of 5 or 6 when dry or 3 or 4 when moist, and chroma of 3 or 4 when dry and 2 or 3 when moist. Rock fragment content ranges from 15 to 30 percent.

The Bw horizon has hue of 7.5YR or 10YR, value of 5 or 6 when dry, and chroma of 3 or 4 when dry. Rock fragment content ranges from 15 to 30 percent.

The Bk horizon has hue of 7.5YR or 10YR, value of 7 or 8 when dry and 5 to 7 when moist, and chroma of 1 to 4 when dry and 3 or 4 when moist. The fine earth fraction is loam or sandy loam and is 18 to 27 percent clay. Rock fragment content ranges from 40 to 65 percent.

The C horizon has value of 5 or 6 when moist. Texture of the fine earth fraction is loam or clay loam. Rock fragment content ranges from 60 to 70 percent.

Jornaham Series

The soils in the Jornaham series are classified as coarse-loamy, mixed, mesic Calcic Gypsiorthids. These deep, well drained, moderately permeable soils formed in alluvium derived mainly from limestone and gypsum. They are on ridges, knolls, and fan terraces. Slope is 2 to 10 percent. Elevation is 5,700 to 6,300 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 53 to 57 degrees F, and the frost-free period is 150 to 180 days.

Typical pedon of Jornaham cobbly fine sandy loam, 2 to 10 percent slopes; about 20 miles northeast of Socorro; 450 feet west and 250 feet south of the northeast corner of sec. 7, T. 1 S., R. 5 E.

A—0 to 2 inches; yellowish brown (10YR 5/4) cobbly fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; 10 percent pebbles and 10 percent cobbles; slightly effervescent; disseminated calcium carbonate; neutral; abrupt wavy boundary.

Bk1—2 to 9 inches; yellowish brown (10YR 5/4) cobbly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine roots; 15 percent pebbles and 10 percent cobbles; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as pendants on the underside of rock fragments; mildly alkaline; gradual wavy boundary.

Bk2—9 to 19 inches; very pale brown (10YR 8/4) gravelly loam, light yellowish brown (10YR 6/4) moist; weak fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine roots; 15 percent pebbles and 5 percent cobbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as thin coatings on rock fragments; mildly alkaline; abrupt wavy boundary.

Bk3—19 to 27 inches; pink (7.5YR 8/4) gravelly loam, light brown (7.5YR 6/4) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine roots; 20 percent pebbles and 5 percent cobbles; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments and as common medium concretions; mildly alkaline; gradual smooth boundary.

Bk4—27 to 34 inches; pink (7.5YR 7/4) gravelly fine sandy loam, light brown (7.5YR 6/4) moist; weak fine subangular blocky structure; hard, firm, nonsticky and nonplastic; few very fine roots; 20 percent pebbles; slightly effervescent; calcium carbonate segregated in common fine rounded soft masses; mildly alkaline; abrupt smooth boundary.

By1—34 to 46 inches; pink (7.5YR 8/4) gravelly gypsiferous loam, light brown (7.5YR 6/4) moist; massive; hard, friable, slightly sticky and slightly plastic; 20 percent pebbles; few fine irregularly shaped gypsum crystals; slightly effervescent; disseminated calcium carbonate and calcium carbonate segregated as thin coatings on the underside of rock fragments; neutral; gradual wavy boundary.

By2—46 to 60 inches; pink (7.5YR 8/4) gravelly gypsiferous fine sandy loam, pink (7.5YR 7/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; 15 percent pebbles; common fine gypsum crystals; slightly effervescent; disseminated calcium carbonate; neutral.

Depth to the calcic horizon is 7 to 11 inches. Depth to the gypsic horizon is 17 to 37 inches.

Laborcita Series

The soils in the Laborcita series are classified as fine-loamy, mixed, thermic Ustollic Calciorthids. These deep, well drained, moderately permeable soils formed in colluvium and alluvium derived mainly from tuff. They are on hogbacks and cuestas. Slope is 15 to 45 percent. Elevation is 5,000 to 6,250 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Laborcita very stony sandy loam in an area of Laborcita-Pilabo-Lemitar complex, 5 to 45 percent slopes; about 7 miles northeast of Socorro; 975 feet north and 175 feet west of the southeast corner of sec. 22, T. 1 S., R. 1 E.

A—0 to 2 inches; brown (7.5YR 5/4) very stony sandy loam, dark brown (7.5YR 3/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; 2 percent stones, 10 percent cobbles, and 40 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt wavy boundary.

AB—2 to 7 inches; brown (7.5YR 5/4) very gravelly sandy loam, dark brown (7.5YR 4/4) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; 5 percent cobbles and 45 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

Bw—7 to 16 inches; brown (7.5YR 5/4) gravelly loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; 5 percent cobbles and 25 percent pebbles; strongly effervescent; disseminated calcium carbonate; mildly alkaline; gradual wavy boundary.

Bk1—16 to 28 inches; light brown (7.5YR 6/4) gravelly loam, brown (7.5YR 5/4) moist; weak fine and subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; 5 percent cobbles and 20 percent pebbles; violently effervescent; disseminated calcium carbonate; mildly alkaline; abrupt wavy boundary.

Bk2—28 to 44 inches; pink (7.5YR 7/4) gravelly loam, brown (7.5YR 5/4) moist; weak very fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few very fine roots; 5 percent cobbles and 25 percent pebbles; violently effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

C—44 to 60 inches; light brown (7.5YR 6/4) gravelly loam, dark brown (7.5YR 4/4) moist; massive; hard, firm, slightly sticky and slightly plastic; 5 percent cobbles and 25 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

Depth to the calcic horizon is 9 to 23 inches. The calcium carbonate equivalent in the calcic horizon is 15 to 35 percent. The 10- to 40-inch control section is 15 to 35 percent coarse fragments.

The A horizon is 35 to 55 percent rock fragments.

The Bw horizon has hue of 7.5YR or 10YR, value of 4 or 5 when dry and 3 to 5 when moist, and chroma of 3 or 4 when dry or moist. The fine earth fraction is loam or clay loam.

The Bk horizon has hue of 7.5YR or 10YR, value of 6 or 7 when dry and 5 or 6 when moist, and chroma of 3 or 4 when dry or moist.

The C horizon has hue of 7.5YR or 10YR, value of 6 or 7 when dry and 4 to 6 when moist, and chroma of 2 to 4 when dry or moist.

Ladron Series

The soils in the Ladron series are classified as loamy-skeletal, carbonatic, mesic Ustollic Calciorthids. These deep, well drained, moderately permeable soils formed in alluvium. They are on knolls and fan terraces. Slope is 1 to 15 percent. Elevation is 5,500 to 7,000 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 56 degrees F, and the frost-free period is 150 to 170 days.

Typical pedon of Ladron very gravelly sandy loam, 1 to 15 percent slopes; about 33 miles northwest of Socorro; 1,950 feet south and 350 feet west of the northeast corner of sec. 15, T. 2 N., R. 3 W.

A—0 to 2 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine roots; 40 percent pebbles and 10 percent cobbles; strongly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt wavy boundary.

Bk1—2 to 9 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine and very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; 50 percent pebbles and 5 percent cobbles; strongly effervescent; disseminated calcium carbonate; mildly alkaline; gradual wavy boundary.

Bk2—9 to 19 inches; very pale brown (10YR 8/3) very gravelly loam, very pale brown (10YR 7/3) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine and few very fine roots; 35 percent pebbles and 10 percent cobbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; moderately alkaline; clear wavy boundary.

Bk3—19 to 31 inches; very pale brown (10YR 7/4) very gravelly loam, light yellowish brown (10YR 6/4) moist; weak very fine subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; common medium and few very fine roots; 40 percent pebbles and 10 percent cobbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; mildly alkaline; abrupt smooth boundary.

2Bk4—31 to 39 inches; very pale brown (10YR 7/4) very gravelly light sandy loam, light yellowish brown (10YR 6/4) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; 40 percent pebbles and 5 percent cobbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as pendants on the underside of rock fragments; moderately alkaline; clear wavy boundary

2Bk5—39 to 47 inches; very pale brown (10YR 7/3) very gravelly light sandy loam, pale brown (10YR 6/3) moist; weak medium and fine subangular blocky structure; hard, firm, nonsticky and nonplastic; few common and fine roots; 40 percent pebbles and 5 percent cobbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; moderately alkaline; clear wavy boundary.

3Bkb—47 to 60 inches; very pale brown (10YR 7/3) very gravelly loam, pale brown (10YR 6/3) moist; weak coarse subangular blocky structure; hard, firm, nonsticky and slightly plastic; 50 percent pebbles and 5 percent cobbles; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; strongly alkaline.

Depth to the calcic horizon is 8 to 16 inches. This horizon has more than 40 percent calcic carbonate equivalent in the less-than-2-millimeter fraction or less-than-20-millimeter fraction.

La Fonda Series

The soils in the La Fonda series are classified as fine-loamy, mixed, mesic Ustollic Camborthids. These deep, well drained, moderately permeable soils formed in alluvium derived mainly from sedimentary rock and eolian material. They are on fan terraces and in swales and drainageways. Slope is 1 to 9 percent. Elevation is 5,400 to 6,200 feet. The average annual precipitation is 10 to 15 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 150 to 180 days.

Typical pedon of a La Fonda fine sandy loam in an area of Harvey-La Fonda association, 1 to 9 percent slopes; about 6 miles south of Claunch; 925 feet east and 2,375 feet south of the northwest corner of sec. 10, T. 3 S., R. 9 E.

A—0 to 7 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 3/4) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; moderately alkaline; clear smooth boundary.

Bw1—7 to 16 inches; brown (7.5YR 5/4) loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw2—16 to 35 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 4/4) moist; weak coarse and moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and few fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

BC—35 to 48 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C—48 to 60 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

Calcium carbonate equivalent is less than 15 percent throughout.

The A horizon has value of 5 or 6 when dry and 3 or 4 when moist. Texture is fine sandy loam, loam, or sandy loam.

The B horizon has value of 5 or 6 when dry and 4 or 5 when moist. Texture is loam or sandy clay loam.

The C horizon has value of 5 or 6 when dry and 4 or 6 when moist, and it has chroma of 4 to 6 when dry or moist. Texture is loam or sandy clay loam.

Landavaso Series

The soils in the Landavaso series are classified as fine-loamy over sandy or sandy-skeletal, mixed, mesic Aridic Argiustolls. These deep, well drained, moderately permeable soils formed in gravelly alluvium derived from rhyolitic tuff and lava. They are in drainageways and on fan terraces. Slope is 1 to 5 percent. Elevation is 6,900 to 7,200 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of Landavaso sandy loam, 1 to 5 percent slopes; along U.S. Highway 60, about 27 miles west of Magdalena; 1,650 feet north and 1,500 feet east of the southwest corner of sec. 20 T. 2 S., R. 8 W.

A—0 to 3 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; single grain; loose, nonsticky and nonplastic; few fine roots; 10 percent pebbles; neutral; clear smooth boundary.

A2—3 to 10 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak very fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common very fine and fine roots; 5 percent pebbles; neutral; abrupt smooth boundary.

Bt1—10 to 17 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and few fine roots; few thin clay films as bridges and colloidal stains; 20 percent pebbles; neutral; abrupt wavy boundary.

Bt2—17 to 27 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and fine subangular blocky structure; slightly hard, firm, slightly sticky and plastic; few fine and very fine roots; few thin clay films on pebbles and as bridges; 25 percent pebbles; neutral; gradual wavy boundary.

2C1—27 to 41 inches; yellowish brown (10YR 5/4) very gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; 35 percent pebbles; neutral; gradual wavy boundary.

2C2—41 to 60 inches; brown (7.5YR 5/4) very gravelly coarse sand, dark brown (7.5YR 4/4) moist; single grain; loose, nonsticky and nonplastic; 5 percent cobbles and 40 percent pebbles; neutral.

Thickness of the mollic epipedon ranges from 7 to 14 inches.

The A horizon is 5 to 15 percent rock fragments.

The B horizon is 15 to 25 percent rock fragments.

The C horizon has value of 3 or 4 when moist, and it has chroma of 3 or 4 when dry or moist. Rock fragment content ranges from 35 to 55 percent.

Lapdun Series

The soils in the Lapdun series are classified as loamy-skeletal, carbonatic, mesic Aridic Calciustolls. These deep, well drained, moderately permeable soils formed in alluvium derived mainly from volcanic rocks. They are on bajadas and fan terraces. Slope is 5 to 30 percent. Elevation is 6,500 to 7,600 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of Lapdun gravelly loam in an area of Lapdun-Datil association, 5 to 30 percent slopes; about 7 miles south and 10 miles west of Magdalena; 250 feet east and 300 feet south of the northwest corner of sec. 32, T. 3 S., R. 5 W.

A—0 to 9 inches; brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and plastic; many fine and very fine roots; 30 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk1—9 to 19 inches; very pale brown (10YR 8/3) very gravelly clay loam, very pale brown (10YR 7/3) moist; massive; extremely hard, extremely firm, sticky and plastic; many very fine roots; 50 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

Bk2—19 to 35 inches; white (10YR 8/2) extremely gravelly clay loam, very pale brown (10YR 8/3) moist; massive; extremely hard, extremely firm, sticky and plastic; common very fine roots; about 90 percent pebbles; strongly effervescent; disseminated calcium carbonate; strongly alkaline; clear wavy boundary.

Bk3—35 to 60 inches; pink (7.5YR 7/4) very gravelly clay loam, reddish yellow (7.5YR 7/6) moist; massive; extremely hard, extremely firm, sticky and plastic; few fine roots; about 40 percent pebbles; violently effervescent; disseminated calcium carbonate; strongly alkaline.

The A horizon has 10 to 55 percent calcium carbonate equivalent. Rock fragment content ranges from 20 to 35 percent.

The Bk horizon has chroma of 2 to 6 when dry or moist. Some pedons have horizons below a depth of 40 inches that have less clay but that have cobbles. Calcium carbonate equivalent decreases to about 15 percent in the lower part of the Bk horizon.

Largo Series

The soils in the Largo series are classified as fine-silty, mixed (calcareous), thermic Typic Torriorthents. These deep, well drained, moderately slowly permeable soils formed in alluvium. They are on flood plains and terraces. Slope is 0 to 3 percent. Elevation is 4,760 to 5,400 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Largo loam, 0 to 3 percent slopes; about 7.5 miles north on New Mexico Highway 47 from junction of U.S. Highway 60 and New Mexico Highway 47; 3,790 feet east from New Mexico Highway 47, on Socorro-Valencia County line, and 1,000 feet south in T. 4 N., R. 2 E. (projected).

A1—0 to 3 inches; reddish brown (5YR 4/4) loam, dark reddish brown (5YR 3/4) moist; weak thin platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; common fine roots and few very fine and medium roots; few very fine pores; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

A2—3 to 10 inches; reddish brown (5YR 5/4) loam, dark reddish brown (5YR 3/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine and few very fine roots; few very fine pores; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

A3—10 to 15 inches; reddish brown (5YR 5/4) silty clay loam, dark reddish brown (5YR 3/4) moist; massive; slightly hard, friable, slightly sticky and plastic; common fine and few very fine, medium, and coarse roots; few very fine and fine pores; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

C1—15 to 23 inches; reddish brown (5YR 5/4) loam, reddish brown (5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and medium roots; few very fine and fine pores; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C2—23 to 34 inches; reddish brown (2.5YR 5/4) clay loam, reddish brown (2.5YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine, fine, and medium roots; few very fine and fine pores; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C3—34 to 41 inches; reddish brown (5YR 5/4) loam, reddish brown (5YR 4/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine roots; few very fine pores; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C4—41 to 58 inches; reddish brown (5YR 5/4) very fine sandy loam, reddish brown (5YR 4/4) moist; soft, very friable, nonsticky and slightly plastic; few fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; diffuse wavy boundary.

C5—58 to 60 inches; reddish brown (5YR 5/4) silty clay loam, reddish brown (5YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; slightly effervescent; disseminated calcium carbonate; mildly alkaline.

The 10- to 40-inch control section is 18 to 35 percent clay.

Lemitar Series

The soils in the Lemitar series are classified as loamy-skeletal, mixed, thermic Lithic Ustollic Haplargids. These shallow, well drained, moderately permeable soils formed in alluvium derived mainly from tuff. They are on hogbacks, cuestas, and hills. Slope is 5 to 20 percent. Elevation is 5,000 to 6,250 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Lemitar very cobbly sandy loam in an area of Laborcita-Pilabo-Lemitar complex, 5 to 45 percent slopes; about 44 miles southwest of Socorro on U.S. Highway 85; 1,575 feet east and 1,800 feet south of the northwest corner of sec. 31, T. 8 S., R. 3 W.

A—0 to 2 inches; brown (7.5YR 4/2) very cobbly sandy loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; 30 percent cobbles and 20 percent pebbles; neutral; abrupt smooth boundary.

Bt—2 to 10 inches; brown (7.5YR 5/4) very cobbly loam, dark brown (7.5YR 3/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; few thin clay films on faces of peds; 25 percent cobbles and 20 percent pebbles; neutral; abrupt wavy boundary.

Btk—10 to 12 inches; brown (7.5YR 4/4) very cobbly loam, dark brown (7.5YR 3/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine roots; few thin clay films on faces of peds; 25 percent cobbles and 25 percent pebbles; slightly effervescent; calcium carbonate segregated as fine seams and as coatings on the underside of coarse fragments; neutral; abrupt irregular boundary.

2R—12 inches; tuff.

Depth to bedrock ranges from 8 to 14 inches.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 or 5 when dry and 3 or 4 when moist, and chroma of 3 or 4 when dry or moist. The fine earth fraction is loam or clay loam and is 35 to 50 percent coarse fragments.

Lithic Torriorthents

Lithic Torriorthents are very shallow and shallow, well drained, moderately rapidly permeable to rapidly permeable soils that formed in colluvium and alluvium derived mainly from sandstone. They are on hogbacks, ridges, and canyon escarpments. Slope is 45 to 70 percent. Elevation is 4,900 to 6,300 feet. The average annual precipitation is 9 to 11 inches. The annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Reference pedon of Lithic Torriorthents very stony sandy loam in an area of Lithic Torriorthents-Lozier-Rock outcrop association, 25 to 70 percent slopes; about 11 miles northeast of Socorro; 3,550 feet north and 1,000 feet east of the southwest corner of sec. 4, T. 2 S., R. 2 E.

A—0 to 6 inches; brown (7.5YR 5/4) very stony sandy loam, strong brown (7.5YR 4/6) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; few fine and common very fine roots; 40 percent channery fragments, 15 percent flagstones, and 6 percent stones; strongly

effervescent; disseminated calcium carbonate; moderately alkaline; abrupt irregular boundary.
R—6 inches; hard sandstone.

Depth to bedrock ranges from 2 to 20 inches. Hue ranges from 2.5YR to 10YR, value from 4 to 8 when dry or moist, and chroma from 1 to 6 when dry or moist. Rock fragment content ranges from 25 to 70 percent, and the texture of the fine earth fraction is sandy loam or loamy sand.

Loarc Series

The soils in the Loarc series are classified as fine-loamy, mixed, mesic Aridic Argiustolls. These deep, well drained, moderately permeable soils formed in alluvial and eolian material. They are on fan terraces. Slope is 1 to 12 percent. Elevation is 6,400 to 8,100 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of Loarc loamy sand, 1 to 12 percent slopes; about 12 miles west of Magdalena; 1,250 feet west and 625 feet south of the northeast corner of sec. 20, T. 2 S., R. 6 W. (projected).

A1—0 to 7 inches; brown (10YR 5/3) loamy sand, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; 5 percent pebbles; neutral; abrupt smooth boundary.
A2—7 to 14 inches; dark brown (10YR 4/3) loamy sand, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; 5 percent pebbles; neutral; abrupt wavy boundary.
Bt—14 to 23 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; few thin clay films on faces of peds; 10 percent pebbles; medium acid; clear wavy boundary.
C1—23 to 36 inches; brown (7.5YR 5/4) sandy loam, brown (7.5YR 4/4) moist; massive; hard, friable, slightly sticky and nonplastic; few very fine roots; 10 percent pebbles; slightly acid; clear wavy boundary.
C2—36 to 60 inches; reddish yellow (7.5YR 7/6) gravelly sandy loam, brown (7.5YR 5/4) moist; massive; hard, friable, slightly sticky and nonplastic; few very fine roots; 15 percent pebbles; slightly acid.

Thickness of the mollic epipedon ranges from 14 to 19 inches. Rock fragment content in the control section ranges from 5 to 15 percent.

The A horizon has value of 4 or 5 when dry, and it has chroma of 2 or 3 when dry or moist. Texture is loamy sand, loamy fine sand, or sandy loam.

The B horizon has hue of 7.5YR or 10YR, value of 4 to 6 when dry and 3 to 5 when moist, and chroma of 3 to 6 when dry or moist. It is sandy clay loam or clay loam.

The C horizon has hue of 7.5YR or 10YR, value of 5 to 7 when dry and 4 to 6 when moist, and chroma of 4 to 6 when dry or moist. It is sandy loam or gravelly sandy loam.

Lozier Series

The soils in the Lozier series are classified as loamy-skeletal, carbonatic, thermic Lithic Calciorthids. These very shallow and shallow, well drained, moderately permeable soils formed in alluvium derived mainly from limestone. They are on cuestas, hogbacks, ridges, and hills. Slope is 10 to 45 percent. Elevation is 4,800 to 6,300 feet. The average annual precipitation is 8 to 11 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Lozier very flaggy loam in an area of Lozier-Rock outcrop complex, 10 to 35 percent slopes; about 5 miles east of Socorro; 1,400 feet north and 4,800 feet east of the southwest corner of sec. 1, T. 3 S., R. 1 E.

A—0 to 3 inches; yellowish brown (10YR 5/4) very flaggy loam, dark yellowish brown (10YR 4/4) moist; weak thin platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; few fine and common very fine roots; 20 percent pebbles and 25 percent flagstones; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.
Bk1—3 to 11 inches; pale brown (10YR 6/3) very flaggy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; few medium roots and common fine and very fine roots; 25 percent pebbles and channery fragments and 30 percent flagstones; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; moderately alkaline; clear wavy boundary.
Bk2—11 to 16 inches; white (10YR 8/2) very flaggy loam, pale brown (10YR 6/3) moist; massive; very hard, very firm, slightly sticky and slightly plastic; few fine and very fine roots; soil matrix is weakly cemented by calcium carbonate; 20 percent pebbles and 25 percent flagstones; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; moderately alkaline; abrupt irregular boundary.
R—16 inches; limestone.

Depth to limestone ranges from 6 to 16 inches. The profile is 20 to 35 percent pebbles and channery fragments and 15 to 25 percent flagstones.

The A horizon has chroma of 3 or 4 when dry or moist. It is very flaggy loam or very flaggy fine sandy loam.

The Bk horizon has hue of 7.5YR or 10YR, value of 6 to 8 when dry and 4 to 6 when moist, and chroma of 2 to 4 when dry or moist. This horizon contains more than 40 percent calcium carbonate equivalent in the less-than-2-millimeter fraction or less- than-20-millimeter fraction.

Magdalena Series

The soils in the Magdalena series are classified as clayey-skeletal, mixed, mesic Ustollic Paleargids. These deep, well drained, very slowly permeable soils formed in gravelly alluvium derived mainly from volcanic rock. They are on bajadas. Slope is 3 to 12 percent. Elevation is 5,500 to 6,300 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 56 degrees F, and the frost-free period is 145 to 165 days.

Typical pedon of Magdalena gravelly loam, 3 to 12 percent slopes; about 10 miles southwest of Socorro; 1,470 feet east and 165 feet north of the southwest corner of sec. 34, T. 3 S., R. 2 W.

A—0 to 2 inches; yellowish red (5YR 5/6) gravelly loam, dark reddish brown (5YR 3/4) moist; weak thin platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; 20 percent pebbles and 5 percent cobbles; neutral; abrupt smooth boundary.

Bt1—2 to 7 inches; reddish brown (5YR 4/4) very gravelly sandy clay, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many fine and very fine roots; few thin clay films on faces of peds; 35 percent pebbles and 5 percent cobbles; slightly acid; abrupt wavy boundary.

Bt2—7 to 14 inches; yellowish red (5YR 4/6) very gravelly clay loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common fine and very fine roots; common thin clay films on faces of peds; 40 percent pebbles and 5 percent cobbles; slightly acid; abrupt wavy boundary.

Bt3—14 to 23 inches; yellowish red (5YR 4/6) very gravelly clay, yellowish red (5YR 4/6) moist; moderate fine subangular blocky structure; hard, friable, very sticky and very plastic; common fine and very fine roots; common moderately thick clay films on faces of peds; 45 percent pebbles and 5 percent cobbles; neutral; clear wavy boundary.

Bt4—23 to 30 inches; dark red (2.5YR 3/6) very gravelly clay, dark red (2.5YR 3/6) moist; moderate medium angular blocky structure parting to strong fine angular blocky; very hard, firm, very sticky and very plastic; few fine and very fine roots; continuous thick clay films on faces of peds; 35 percent pebbles and 5 percent cobbles; neutral; clear wavy boundary.

Bt5—30 to 36 inches; red (2.5YR 4/6) very gravelly clay, red (2.5YR 4/6) moist; strong coarse prismatic structure; very hard, firm, very sticky and very plastic; few fine and very fine roots; continuous thick clay films on faces of peds; 35 percent pebbles; mildly alkaline; abrupt wavy boundary.

Btk1—36 to 51 inches; yellowish red (5YR 5/6) very gravelly clay, yellowish red (5YR 5/6) moist; moderate medium prismatic structure parting to moderate fine and very fine angular blocky; very hard, firm, very sticky and very plastic; few very fine and fine roots; continuous thick clay films on faces of peds; violently effervescent; calcium carbonate segregated as soft masses; 45 percent pebbles and 5 percent cobbles; mildly alkaline; clear wavy boundary.

Btk2—51 to 60 inches; yellowish red (5YR 5/6) very gravelly clay, yellowish red (5YR 4/6) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; very hard, firm, very sticky and very plastic; few fine and very fine roots; many moderately thick clay films on faces of peds; 50 percent pebbles and 5 percent cobbles; violently effervescent; calcium carbonate segregated as soft masses; mildly alkaline.

Depth to secondary calcium carbonate ranges from 26 to 51 inches.

The B horizon has hue of 2.5YR or 5YR, value of 3 to 5 when dry or moist, and chroma of 4 to 6 when dry or moist. Texture is sandy clay, clay loam, or clay. Coarse fragment content is 35 to 60 percent. Clay content is 35 to 50 percent.

Majada Series

The soils in the Majada series are classified as loamy-skeletal, mixed, mesic Aridic Argiustolls. These deep, well drained, moderately slowly permeable soils formed in alluvium derived mainly from volcanic rock. They are on bajadas and fan terraces. Slope is 4 to 6 percent. Elevation is 6,400 to 7,600 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of a Majada loam in an area of Loarc-Datil-Majada association, 2 to 12 percent slopes; about 33 miles northwest of Magdalena; 1,050 feet west and 650 feet south of the northeast corner of sec. 30, T. 2 N., R. 8 W.

A—0 to 3 inches; dark brown (7.5YR 4/2) loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine roots; 5 percent pebbles; mildly alkaline; abrupt smooth boundary.

Bw—3 to 7 inches; dark brown (7.5YR 4/2) loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and very fine roots; 5 percent pebbles; mildly alkaline; clear wavy boundary.

Bt—7 to 10 inches; dark brown (7.5YR 4/2) very gravelly clay loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; common very fine and few fine roots; few fine pores; few thin clay coatings on sand grains; 35 percent pebbles; mildly alkaline; abrupt wavy boundary.

Btk—10 to 21 inches; brown (7.5YR 4/4) very gravelly clay loam, brown (7.5YR 4/4) moist; strong medium subangular structure; very hard, very firm, sticky and plastic; common very fine and few fine roots; few fine pores; common moderately thick clay films on faces of peds; 40 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

Bk1—21 to 40 inches; pinkish gray (7.5YR 6/2) very gravelly loam, brown (7.5YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; 40 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; abrupt wavy boundary.

Bk2—40 to 60 inches; pinkish gray (7.5YR 7/2) gravelly sandy clay loam, brown (7.5YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; 30 percent pebbles; violently effervescent; disseminated calcium carbonate; mildly alkaline.

Thickness of the mollic epipedon ranges from 8 to 11 inches.

The Bt horizon has value of 3 or 4 when moist, and it has chroma of 2 to 4 when dry or moist. Coarse fragment content ranges from 35 to 50 percent.

The Bk horizon is 30 to 40 percent coarse fragments.

Manzano Series

The soils in the Manzano series are classified as fine-loamy, mixed, mesic Cumulic Haplustolls. These deep, well drained, moderately slowly permeable soils formed in recent alluvium. They are in drainageways and swales. Slope is 1 to 3 percent. Elevation is 6,000 to 7,400 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of Manzano silt loam, 1 to 3 percent slopes; about 6 miles southeast of the National Radio Astronomy Laboratory Headquarters; 1,450 feet east and 100 feet south of the northwest corner of sec. 30, T. 3 S., R. 6 W.

A—0 to 8 inches; brown (7.5YR 5/2) silt loam, dark brown (7.5YR 3/2) moist; weak thin platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; common fine roots; neutral; clear smooth boundary.

Bw1—8 to 20 inches; dark brown (7.5YR 4/2) clay loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

Bw2—20 to 38 inches; dark brown (7.5YR 3/2) silty clay loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common fine roots; 10 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

C1—38 to 50 inches; brown (7.5YR 5/2) loam, dark brown (7.5YR 3/2) moist; massive; hard, firm, sticky and plastic; few fine roots; 10 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

C2—50 to 60 inches; brown (7.5YR 5/2) clay loam, dark brown (7.5YR 3/2) moist; massive; hard, firm, sticky and plastic; few fine roots; mildly alkaline.

The mollic epipedon ranges from 20 to 60 inches in thickness.

Mespun Series

The soils in the Mespun series are classified as mixed, mesic Ustic Torripsamments. These deep, excessively drained, rapidly permeable soils formed in eolian sand. They are on plains and in swales. Slope is 1 to 6 percent. Elevation is 5,600 to 6,500 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 50 to 54 degrees F, and the frost-free period is 150 to 170 days.

Typical pedon of Mespun fine sand, 1 to 6 percent slopes; about 5.5 miles southwest of Gran Quivira; 2,050 feet south and 2,350 feet west of the northeast corner of sec. 14, T. 1 S., R. 7 E.

A1—0 to 3 inches; brown (7.5YR 5/4) fine sand, dark brown (7.5YR 3/4) moist; single grain; loose, nonsticky and nonplastic; common very fine and few fine roots; mildly alkaline; clear smooth boundary.

A2—3 to 11 inches; brown (7.5YR 5/4) fine sand, brown (7.5YR 4/4) moist; single grain; loose, nonsticky and nonplastic; many very fine and few fine roots; mildly alkaline; clear smooth boundary.

C—11 to 60 inches; strong brown (7.5YR 5/6) fine sand, strong brown (7.5YR 4/6) moist; single grain; loose, nonsticky and nonplastic; common very fine and few fine roots; mildly alkaline.

In some pedons the C horizon has thin discontinuous lenses that are 5 to 15 percent rock fragments.

Millett Series

The soils in the Millett series are classified as fine-loamy, mixed, mesic Ustollic Haplargids. These deep, well drained, moderately permeable soils formed in alluvium derived from rhyolitic tuff, lava, and granite. They are on bajadas. Slope is 1 to 15 percent. Elevation is 5,400 to 7,000 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 145 to 180 days.

Typical pedon of a Millett gravelly sandy loam in an area of Millett-Sedillo complex, 1 to 15 percent slopes; about 16 miles north and 3 miles east of Magdalena; 2,800 feet south and 500 feet west of the northeast corner of sec. 6, T. 1 S., R. 3 W.

A—0 to 3 inches; brown (7.5YR 4/2) gravelly sandy loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots and few medium roots; 15 percent pebbles; neutral; clear smooth boundary.

Bt—3 to 9 inches; brown (7.5YR 5/4) gravelly loam, dark brown (7.5YR 3/4) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; few thin clay films on faces of peds and as bridges; 10 percent pebbles and 5 percent cobbles; slightly effervescent; fine irregular filaments or threads of calcium carbonate; mildly alkaline; abrupt wavy boundary.

Btk—9 to 18 inches; light brown (7.5YR 6/4) gravelly sandy clay loam, brown (7.5YR 4/4) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few thin clay bridges and colloidal stains; 25 percent pebbles and 5 percent cobbles; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as common fine and few medium irregular soft masses and concretions; mildly alkaline; abrupt wavy boundary.

Bk1—18 to 30 inches; pink (7.5YR 7/4) very gravelly sandy loam, light brown (7.5YR 6/4) moist; strong medium subangular blocky structure and massive; hard, friable, nonsticky and nonplastic; few very fine and fine roots; 50 percent pebbles and 5 percent cobbles; violently effervescent; disseminated calcium carbonate; strongly alkaline; gradual irregular boundary.

Bk2—30 to 60 inches; pink (7.5YR 7/4) very gravelly loam, light brown (7.5YR 6/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; 40 percent pebbles and 5 percent cobbles; violently effervescent; disseminated calcium carbonate; strongly alkaline.

Depth to the calcic horizon is 10 to 20 inches. Calcium carbonate equivalent in the calcic horizon is 15 to 65 percent.

Mion Series

The soils in the Mion series are classified as clayey, mixed (calcareous), mesic, shallow Ustic Torriorthents. These shallow, well drained, very slowly permeable soils formed in alluvium derived mainly from shale and sandstone. They are on small alluvial fans and knolls. Slope is 2 to 10 percent. Elevation is 5,500 to 7,800 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 56 degrees F, and the frost-free period is 150 to 160 days.

Typical pedon of a Mion gravelly sandy loam in an area of Mion-San Mateo-Rock outcrop association, 1 to 10 percent slopes; about 37 miles northwest of Magdalena and 1.5 miles southwest of Pueblo Viejo Mesa; 200 feet east and 375 feet south of the northwest corner of sec. 29, T. 4 N., R. 7 W.

A—0 to 2 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; few fine and very fine roots; 20 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

AC—2 to 7 inches; light yellowish brown (2.5Y 6/4) clay loam, olive brown (2.5Y 4/4) moist; moderate medium granular structure; hard, firm, sticky and plastic; few fine and many very fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1—7 to 12 inches; grayish brown (2.5Y 5/2) silty clay, dark grayish brown (2.5Y 4/2) moist; massive; very hard, very firm, sticky and plastic; few medium and fine roots and common very fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C2—12 to 16 inches; light brownish gray (2.5Y 6/2) silty clay, dark grayish brown (2.5Y 4/2) moist; massive; hard, firm, sticky and plastic; few fine and very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Cr—16 inches; pale olive (5Y 6/4) soft shale, olive (5Y 4/4) moist.

Depth to soft shale or claystone ranges from 10 to 20 inches.

The AC horizon, where present, has hue of 10YR or 2.5Y, value of 5 or 6 when dry and 4 or 5 when moist, and chroma of 3 or 4 when dry or moist. It is clay loam or silty clay loam.

Motoqua Series

The soils in the Motoqua series are classified as loamy-skeletal, mixed, mesic Lithic Argiustolls. These shallow, well drained, moderately slowly permeable soils formed in alluvium derived mainly from tuff. They are on mountains, hills, and ridges. Slope is 10 to 50 percent. Elevation is 6,100 to 8,600 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 170 days.

Typical pedon of a Motoqua very gravelly loam in an area of Abrazo-Motoqua, cool-Rock outcrop complex, 10 to 50 percent slopes; about 12 miles south of the intersection of U.S. Highway 60 and New Mexico Highway 78 and 1 mile east of Highway 78; 2,475 feet east and 375 feet south of the northwest corner of sec. 28, T. 4 S., R. 8 W.

A—0 to 2 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 fine and common very fine roots; 40 percent pebbles; neutral; abrupt smooth boundary.

BA—2 to 6 inches; dark brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; 20 percent cobbles and 30 percent pebbles; neutral; clear smooth boundary.

Bt—6 to 12 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and plastic; common fine and many very fine roots; 30 percent cobbles and 20 percent pebbles; neutral; clear wavy boundary.

R—12 inches; tuff.

Depth to bedrock ranges from 10 to 20 inches. Thickness of the mollic epipedon ranges from 9 to 13 inches.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5 when dry and 2 or 3 when moist, and chroma of 2 or 3 when dry or moist. Rock fragment content ranges from 15 to 60 percent. Texture is gravelly loam, very gravelly loam, or very stony loam.

The B horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5 when dry and 3 or 4 when moist, and chroma of 2 to 4 when dry or moist. Rock fragment content ranges from 35 to 50 percent. Texture of the fine earth fraction is clay loam or loam.

Musofare Series

The soils in the Musofare series are classified as loamy-skeletal, mixed, mesic Ustollic Haplargids. These moderately deep, well drained, moderately slowly permeable soils formed in alluvium derived mainly from siltstone and sandstone. They are on mesas, knolls, and cuestas. Slope is 2 to 15 percent. Elevation is 5,600 to 6,600 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 52 to 56 degrees F, and the frost-free period is 160 to 180 days.

Typical pedon of a Musofare channery loam in an area of Creel-Musofare-Clovis complex, 1 to 15 percent slopes; about 19 miles northeast of Socorro; 1,050 feet west and 170 feet north of southeast corner of sec. 4, T. 1 N., R. 4 E.

A—0 to 2 inches; brown (7.5YR 5/4) channery loam, dark brown (7.5YR 4/4) moist; moderate fine granular structure; soft, very friable, nonsticky and slightly plastic; few very fine roots; few very fine tubular pores; 5 percent flagstones and 20 percent channery fragments; neutral; abrupt smooth boundary.

Bt—2 to 14 inches; brown (7.5YR 4/4) very channery clay loam, dark brown (7.5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and few fine roots; common fine irregular pores; few thin and moderately thick clay films on faces of peds and in pores; common thick clay coatings on rock fragments; 50 percent channery fragments and 5 percent flagstones; neutral; abrupt wavy boundary.

2Bk1—14 to 20 inches; light reddish brown (5YR 6/4) channery loam, reddish brown (5YR 5/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few medium, fine, and very fine roots; common very fine tubular pores; 15 percent channery fragments; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as common fine soft masses and filaments; moderately alkaline; clear smooth boundary.

2Bk2—20 to 26 inches; light reddish brown (5YR 6/4) channery loam, reddish brown (5YR 4/4) moist; moderate very fine subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; few very fine and fine roots; few very fine irregular pores; 25 percent channery fragments; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as few fine filaments, concretions, and soft masses; moderately alkaline; abrupt smooth boundary.

2Cr—26 to 31 inches; light reddish brown (5YR 6/4) soft sandstone, reddish brown (5YR 5/4) moist; strata are platy and are 0.5 to 1.0 inch thick by 1 to 2 inches in length; roots matted along the surface of the contact; thin discontinuous lime coatings along the surface of the contact; abrupt wavy boundary.

3R—31 inches; light reddish brown (5YR 6/4) hard sandstone.

Depth to the soft bedrock ranges from 20 to 40 inches. Depth to the base of the argillic horizon and the top of the calcic horizon is 10 to 16 inches.

Navajo Series

The soils in the Navajo series are classified as fine, mixed (calcareous), mesic Vertic Torrifluvents. These deep, well drained, very slowly permeable soils formed in alluvium derived mainly from shale and claystone. They are on the bottom of swales and toes of alluvial fans. Slope is 0 to 2 percent. Elevation is 5,400 to 6,800 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 56 degrees F, and the frost-free period is 145 to 165 days.

Typical pedon of a Navajo silt loam in an area of Navajo-Alicia association, 0 to 4 percent slopes; about 24 miles north of Magdalena and 3 miles east of Puertecito; 1,175 feet east and 1,775 feet south of the northwest corner of sec. 26, T. 3 N., R. 5 W.

A—0 to 3 inches; reddish brown (5YR 5/3) heavy silt loam, reddish brown (5YR 4/3) moist; moderate thin platy structure; soft, very friable, sticky and plastic; common fine and very fine roots; slightly effervescent; disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

C1—3 to 16 inches; reddish brown (5YR 5/3) silty clay loam, reddish brown (5YR 4/4) moist; moderate medium platy structure; slightly hard, friable, sticky and plastic; many fine and common very fine roots; few cracks 1 centimeter wide; strongly effervescent; disseminated calcium carbonate; very strongly alkaline; clear smooth boundary.

C2—16 to 47 inches; reddish brown (5YR 5/4) silty clay, reddish brown (5YR 4/4) moist; massive; very hard, very firm, sticky and plastic; few medium and common fine roots; few cracks 1 centimeter wide; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C3—47 to 60 inches; reddish brown (5YR 5/4) silty clay, reddish brown (5YR 4/4) moist; massive; very hard, very firm, sticky and plastic; few very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

Salinity ranges from 8 to 16 millimhos per centimeter.

Netoma Series

The soils in the Netoma series are classified as coarse-loamy, gypsic, mesic Typic Gypsiorthids. These deep, well drained, moderately permeable soils formed in alluvium derived mainly from gypsum. They are on knolls and fan terraces. Slope is 2 to 10 percent. Elevation is 5,500 to 6,500 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 53 to 57 degrees F, and the frost-free period is 150 to 180 days.

Typical pedon of a Netoma loam in an area of Netoma-Claunch association, 2 to 10 percent slopes; about 22 miles east of Socorro; 2,550 feet north and 650 feet east of the southwest corner of sec. 31, T. 1 S., R. 5 E.

A—0 to 2 inches; very pale brown (10YR 7/3) loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; few fine and very fine roots; strongly effervescent; disseminated calcium carbonate; 5 percent pebbles; mildly alkaline; clear smooth boundary.

By1—2 to 9 inches; white (10YR 8/2) silt loam, very pale brown (10YR 7/3) moist; weak very fine subangular blocky structure, soft, very friable, slightly sticky and nonplastic; common very fine roots; common medium nests of gypsum crystals; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

By2—9 to 19 inches; white (10YR 8/2) loam, very pale brown (10YR 7/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; few very fine roots; common medium nests of gypsum crystals; slightly effervescent; disseminated calcium carbonate and calcium carbonate segregated in few fine soft masses; mildly alkaline; abrupt wavy boundary.

C1—19 to 31 inches; very pale brown (10YR 8/4) silt loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, nonsticky and slightly plastic; common medium and very fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

C2—31 to 39 inches; very pale brown (10YR 8/4) loam, very pale brown (10YR 7/4) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine roots; 5 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt wavy boundary.

C3—39 to 60 inches; very pale brown (10YR 8/4) loam, very pale brown (10YR 7/4) moist; massive; hard, friable, slightly sticky and slightly plastic; slightly effervescent; disseminated calcium carbonate; 10 percent pebbles; mildly alkaline.

Content of calcium carbonate and calcium carbonate segregated gypsum in the 10- to 40-inch control section averages more than 40 percent by weight. Depth to the gypsic horizon is 2 to 10 inches. Content of gypsum in the gypsic horizon is 35 to 60 percent by weight. Salinity in the profile ranges from 4 to 8 millimhos per centimeter.

Nickel Series

The soils in the Nickel series are classified as loamy-skeletal, mixed, thermic Typic Calciorthids. These deep, well drained, moderately slowly permeable soils formed in gravelly alluvial deposits derived mainly from rhyolitic tuff and lava. They are on bajadas. Slope is 1 to 25 percent. Elevation is 4,500 to 5,500 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Nickel very gravelly sandy loam in an area of Nickel-Caliza very gravelly sandy loams, 1 to 30 percent slopes; about 15 miles southwest of San Marcial and 1 mile north of Nogal Canyon; 1,675 feet east and 750 feet south of the northwest corner of sec. 8, T. 9 S., R. 3 W.

A1—0 to 2 inches; pinkish gray (7.5YR 6/2) very gravelly sandy loam, dark brown (7.5YR 4/4) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; many very fine roots; 55 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt wavy boundary.

A2—2 to 8 inches; pinkish gray (7.5YR 6/2) very gravelly sandy loam, strong brown (7.5YR 4/6) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and many very fine roots; 40 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt wavy boundary.

Bk1—8 to 22 inches; pinkish white (7.5YR 8/2) extremely gravelly sandy loam, pink (7.5YR 7/4) moist; massive; slightly hard, friable, slightly sticky and nonplastic; many very fine roots; 70 percent pebbles; violently effervescent; calcium carbonate segregated in soft masses; moderately alkaline; abrupt wavy boundary.

Bk2—22 to 28 inches; pinkish white (7.5YR 8/2) very gravelly sandy loam, strong brown (7.5YR 5/6) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; 40 percent pebbles; violently effervescent; disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

Bk3—28 to 40 inches; pink (7.5YR 7/4) very gravelly sandy loam, strong brown (7.5YR 5/6) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; 40 percent pebbles; strongly effervescent; disseminated calcium carbonate; about 25 percent calcium carbonate equivalent; strongly alkaline; abrupt wavy boundary.

Bk4—40 to 54 inches; pink (7.5YR 7/4) very gravelly sandy loam, strong brown (7.5YR 5/6) moist; massive; very hard, firm, slightly sticky and slightly plastic; few very fine roots; 45 percent pebbles; strongly effervescent; disseminated calcium carbonate; about 25 percent calcium carbonate equivalent; moderately alkaline; abrupt wavy boundary.

C—54 to 60 inches; pink (7.5YR 7/4) extremely gravelly loam, strong brown (7.5YR 4/6) moist; massive; hard, firm, nonsticky and nonplastic; few very fine roots; 80 percent pebbles; strongly effervescent; disseminated calcium carbonate; about 20 percent calcium carbonate equivalent; moderately alkaline.

Depth to the calcic horizon is 8 to 12 inches. Calcium carbonate equivalent drops from 50 percent in the Bk1 horizon to a range of 20 to 30 percent in the lower part of the Bk horizon.

The Nickel soils in this survey area are taxadjunct to the Nickel series because they are shallower above the calcic horizon, which also has slightly more calcium carbonate than is defined in the range for the series. This difference, however, does not significantly affect use and management.

Nickel Variant

The soils in the Nickel Variant are classified as loamy-skeletal, carbonatic, thermic Typic Calciorthids. These deep, well drained, moderately rapidly permeable soils formed in alluvium derived mainly from limestone and sandstone. They are on bajadas and fan terraces. Slope is 2 to 15 percent. Elevation is 5,400 to 5,700 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Nickel Variant very gravelly sandy loam, 2 to 15 percent slopes; about 13 miles east of Socorro; 1,650 feet south and 2,400 feet west of the northeast corner of sec. 20, T. 3 S., R. 3 E.

A—0 to 2 inches; light brown (7.5YR 6/4) very gravelly sandy loam, brown (7.5YR 5/4) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; 35 percent pebbles and 5 percent cobbles; violently effervescent; disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

Bk1—2 to 6 inches; light brown (7.5YR 6/4) very gravelly loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; 35 percent pebbles and 5 percent cobbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on the underside of rock fragments; strongly alkaline; clear smooth boundary.

Bk2—6 to 16 inches; pinkish white (7.5YR 8/2) very gravelly coarse sandy loam, light brown (7.5YR 6/4) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and nonplastic; common very fine and few fine and medium roots; weakly cemented with calcium carbonate; 35 percent pebbles and 5 percent cobbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; strongly alkaline; clear smooth boundary.

Bk3—16 to 30 inches; pinkish white (7.5YR 8/2) very gravelly coarse sandy loam, light brown (7.5YR 6/4) moist; weak medium and coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; weakly cemented with calcium carbonate; 40 percent pebbles, 5 percent cobbles, and 5 percent stones; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; moderately alkaline; clear smooth boundary.

Bk4—30 to 45 inches; pink (7.5YR 7/4) extremely gravelly coarse sand, brown (7.5YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine roots and few fine and medium roots; 55 percent pebbles, 5 percent cobbles, and 5 percent stones; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; moderately alkaline; clear irregular boundary.

C—45 to 60 inches; light brown (7.5YR 6/4) extremely gravelly coarse sand, brown (7.5YR 4/4) moist; single grain; loose, nonsticky and nonplastic; common very fine and few fine roots; 55 percent pebbles and 5 percent cobbles; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; moderately alkaline.

Calcium carbonate equivalent ranges from 40 to 60 percent in the 10- to 40-inch control section.

Nolam Series

The soils in the Nolam series are classified as loamy-skeletal, mixed, thermic Ustollic Haplargids. These deep, well drained, moderately permeable soils formed in gravelly alluvium derived mainly from volcanic rock. They are on fan terraces and bajadas. Slope is 1 to 15 percent. Elevation is 4,500 to 5,600 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Nolam gravelly sandy loam, 1 to 7 percent slopes; about 15 miles southwest of Socorro on the Pedro Armendaris Grant No. 34; 1,350 feet east and 3,375 feet north of the southwest corner of sec. 5, T. 6 S., R. 2 W. (projected).

A—0 to 2 inches; light brown (7.5YR 6/4) gravelly sandy loam, dark brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; 20 percent pebbles; neutral; abrupt wavy boundary.

Bt1—2 to 13 inches; reddish brown (5YR 5/4) very gravelly sandy clay loam, reddish brown (5YR 4/4) moist; moderate fine and very fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and few fine roots; thin clay films on pebbles and sand grains; 40 percent pebbles; neutral; clear wavy boundary.

Bk1—13 to 25 inches; light reddish brown (5YR 6/4) very gravelly sandy loam, reddish brown (5YR 4/4) moist; weak fine and very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; 5 percent cobbles and 30 percent pebbles; slightly effervescent; disseminated calcium carbonate; neutral; abrupt smooth boundary.

Bk2—25 to 60 inches; pink (5YR 7/3) very gravelly sandy loam, reddish brown (5YR 5/3) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few very fine roots; 50 percent pebbles; violently effervescent; pebbles coated with calcium carbonate segregated as coatings on pebbles and calcium carbonate weakly cemented into clusters; mildly alkaline.

The A horizon has hue of 5YR or 7.5YR, and it has value of 5 or 6 when dry. Texture is gravelly sandy loam or very channery sandy loam.

The Bt horizon has hue of 5YR or 2.5YR, value of 5 or 6 when dry, and chroma of 4 or 6 when moist. Rock fragment content ranges from 35 to 40 percent, and the fine earth fraction is sandy clay loam or sandy loam.

The Bk horizon has hue of 2.5YR or 5YR. Rock fragment content ranges from 35 to 50 percent. Calcium carbonate equivalent ranges from 15 to 40 percent. Texture of the fine earth fraction is loamy coarse sand, sandy loam, or loamy sand.

Oscura Series

The soils in the Oscura series are classified as fine, mixed (calcareous), thermic Ustic Torrifluvents. These deep, well drained, slowly permeable soils formed in alluvium derived mainly from siltstone and shale. They are on flood plains of intermittent drainageways. Slope is 1 to 3 percent. Elevation is 5,100 to 5,700 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Oscura silty clay loam, 1 to 3 percent slopes; about 2 miles south of Bingham; 3,650 feet north and 2,650 feet east of the southwest corner of sec. 27, T. 5 S., R. 5 E.

A1—0 to 2 inches; reddish brown (5YR 4/4) silty clay loam, dark reddish brown (5YR 3/4) moist; weak medium platy structure parting to moderate fine granular; soft, very friable, sticky and plastic; few very fine and fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

A2—2 to 9 inches; reddish brown (5YR 4/4) silty clay loam, dark reddish brown (5YR 3/4) moist; moderate thick platy structure; slightly hard, friable, sticky and plastic; common very fine and few fine roots; few very fine salt crystals; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw—9 to 15 inches; reddish brown (5YR 4/4) silty clay, dark reddish brown (5YR 3/4) moist; moderate coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; common very fine salt crystals; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

BC—15 to 41 inches; reddish brown (5YR 4/4) silty clay, dark reddish brown (5YR 3/4) moist; weak coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; many small slickensides; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bkb—41 to 60 inches; reddish brown (5YR 4/4) silty clay loam, dark reddish brown (5YR 3/4) moist; weak medium prismatic structure parting to moderate coarse subangular blocky; hard, firm, sticky and plastic; few very fine and fine roots; strongly effervescent; calcium carbonate segregated as filaments and seams; moderately alkaline.

Pajarito Series

The soils in the Pajarito series are classified as coarse-loamy, mixed, thermic Typic Camborthids. These deep, well drained, moderately rapidly permeable soils formed in eolian and alluvial material. They are on fan terraces, bajadas, and convex plains. Slope is 1 to 5 percent. Elevation is 4,400 to 5,600 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Pajarito loamy fine sand in an area of Wink-Pajarito complex, 1 to 8 percent slopes; about 20 miles south of San Antonio; 2,400 feet north and 1,500 east of the southwest corner of sec. 8, T. 8 S., R. 1 E.

A—0 to 2 inches; light brown (7.5YR 6/4) loamy fine sand, dark brown (7.5YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few fine roots; mildly alkaline; abrupt smooth boundary.

Bw—2 to 8 inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; few very fine and fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

Bk1—8 to 19 inches; light brown (7.5YR 6/4) sandy loam, brown (7.5YR 5/4) moist; moderate very fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and few very fine roots; strongly effervescent; calcium carbonate segregated as few fine irregular filaments and threads; mildly alkaline; abrupt wavy boundary.

Bk2—19 to 27 inches; light brown (7.5YR 6/4) sandy loam, brown (7.5YR 5/4) moist; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; few fine roots; strongly effervescent; calcium carbonate segregated as few fine irregular filaments and threads; mildly alkaline; gradual smooth boundary.

Bk3—27 to 44 inches; light brown (7.5YR 6/4) sandy loam, brown (7.5YR 5/4); moderate fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine roots; strongly effervescent; calcium carbonate segregated as few thin irregular filaments and threads; moderately alkaline; clear wavy boundary.

C3—44 to 60 inches; white (N 8/0) sandy loam, pink (7.5YR 8/4) moist; massive; hard, friable, nonsticky and nonplastic; few fine roots; common fine tubular pores; violently effervescent; disseminated calcium carbonate; moderately alkaline.

Calcium carbonate equivalent ranges from about 5 to 15 percent at a depth of less than 40 inches.

The B horizon has value of 4 or 5 when moist.

The C horizon has value of 6 or 8 when dry or moist, and it has chroma of neutral to 4 when dry or moist.

Palma Series

The soils in the Palma series are classified as coarse-loamy, mixed, mesic Ustollic Haplargids. These deep, well drained, moderately rapidly permeable soils formed in alluvium derived mainly from eolian sand. They are on plains and fan terraces and in swales. Slope is 1 to 5 percent. Elevation is 5,700 to 6,600 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 50 to 54 degrees F, and the frost-free period is 150 to 170 days.

Typical pedon of a Palma loamy fine sand in an area of Palma, thick surface-Penistaja-Palma complex, 1 to 5 percent slopes; about 3 miles south and 5 miles west of Gran Quivira; 850 feet west and 1,525 feet south of the northeast corner of sec. 15, T. 1 S., R. 7 E.

A—0 to 3 inches; brown (10YR 4/3) loamy fine sand, dark brown (10YR 3/3) moist; weak medium platy structure parting to weak very fine granular; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; mildly alkaline; clear smooth boundary.

Bt1—3 to 7 inches; brown (7.5YR 4/4) fine sandy loam, strong brown (7.5YR 4/6) moist; weak coarse subangular blocky structure; hard, firm, slightly sticky and nonplastic; common very fine and few fine roots; few fine tubular pores; few thin clay films in pores; mildly alkaline; clear smooth boundary.

Bt2—7 to 14 inches; strong brown (7.5YR 5/6) fine sandy loam, strong brown (7.5YR 4/6) moist; moderate coarse subangular blocky structure; hard, firm, slightly sticky and nonplastic; common very fine roots and few fine and medium roots; few medium tubular pores; common thin clay films in pores and on faces of peds; mildly alkaline; clear wavy boundary.

Bt3—14 to 20 inches; strong brown (7.5YR 5/6) fine sandy loam, strong brown (7.5YR 4/6) moist; few medium faint strong brown (7.5YR 4/6) mottles, strong brown (7.5YR 5/8) moist; weak coarse subangular blocky structure; hard, firm, slightly sticky and nonplastic; few very fine, fine, and medium roots; few fine and medium tubular pores; few thin clay films in pores and as bridges between mineral grains; moderately alkaline; clear wavy boundary.

Bt4—20 to 32 inches; strong brown (7.5YR 5/6) fine sandy loam, strong brown (7.5YR 4/6) moist; weak coarse subangular blocky structure; hard, firm, nonsticky and nonplastic; few very fine, fine, and medium roots; few thin clay bridges between mineral grains; slightly effervescent; disseminated calcium carbonate and calcium carbonate segregated in few fine masses and filaments; moderately alkaline; gradual wavy boundary.

Bk—32 to 51 inches; strong brown (7.5YR 5/6) loamy fine sand, strong brown (7.5YR 4/6) moist; massive; hard, friable, nonsticky and nonplastic; few very fine and fine roots; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated in few fine masses and filaments; moderately alkaline; diffuse broken boundary.

C2—51 to 60 inches; reddish yellow (7.5YR 6/6) loamy fine sand, strong brown (7.5YR 4/6) moist; massive; hard, friable, nonsticky and nonplastic; few very fine and fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5 when dry and 3 or 4 when moist, and chroma of 3 to 6 when dry or moist. Texture is fine sand or loamy fine sand.

The B horizon has value of 4 to 7 when dry and 3 to 6 when moist, and it has chroma of 4 to 6 when dry or moist. Texture is sandy loam, fine sandy loam, and loamy sand with thin strata of sandy clay loam. Clay content averages 8 to 17 percent.

The C horizon has texture of loamy fine sand, sandy loam, or sandy clay loam.

The Palma soils in map units 718 and 788 have a thicker coarse textured epipedon than is defined in the range for the Palma series. This difference, however, does not significantly affect use and management.

Pena Series

The soils in the Pena series are classified as loamy-skeletal, mixed, mesic Aridic Calciustolls. These deep, well drained, moderately permeable soils formed in alluvium derived mainly from volcanic rock. They are on bajadas. Slope is 2 to 8 percent. Elevation is 6,300 to 7,500 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of a Pena sandy loam in an area of Guy-Dioxice-Pena association, 1 to 8 percent slopes; about 25 miles west of Magdalena; 625 feet west and 750 feet south of the northeast corner of sec. 21, T. 3 S., R. 8 W.

A1—0 to 2 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; single grain; loose, nonsticky and nonplastic; few fine roots; 10 percent pebbles; slightly effervescent; neutral; abrupt smooth boundary.

A2—2 to 11 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; weak fine and very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; 10 percent pebbles; strongly effervescent disseminated calcium carbonate; neutral; clear smooth boundary.

Bk1—11 to 22 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, nonsticky and slightly plastic; few very fine and fine roots; 5 percent cobbles and 25 percent pebbles; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as thin coatings on rock fragments; mildly alkaline; gradual smooth boundary.

Bk2—22 to 34 inches; white (10YR 8/2) very gravelly sandy loam, light gray (10YR 7/2) moist; massive; hard, firm, nonsticky and nonplastic; few fine roots; 10 percent cobbles and 40 percent pebbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as many medium concretions and as coatings and pendants on rock fragments; mildly alkaline; clear wavy boundary.

Bk3—34 to 60 inches; very pale brown (10YR 8/3) very gravelly sandy loam, light gray (10YR 7/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; 10 percent cobbles and 30 percent pebbles; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on rock fragments; mildly alkaline.

The 10- to 40-inch control section averages more than 35 percent rock fragments by volume.

Penistaja Series

The soils in the Penistaja series are classified as fine-loamy, mixed, mesic Ustollic Haplargids. These deep, well drained, moderately permeable soils formed in alluvial and eolian material. They are on fan terraces, plains, and bajadas. Slope is 1 to 8 percent. Elevation is 5,200 to 7,000 feet. The average annual precipitation is 10 to 15 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 145 to 180 days.

Typical pedon of a Penistaja fine sandy loam in an area of Penistaja-Clovis fine sandy loams, 1 to 8 percent slopes; about 14 miles west of Claunch; 1,900 feet west and 2,275 feet north of the northeast corner of sec. 20, T. 2 S., R. 7 E.

A1—0 to 2 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 3/4) moist; weak thin platy structure parting to moderate very fine granular; soft, very friable, nonsticky and nonplastic; few very fine roots; mildly alkaline; clear smooth boundary.

A2—2 to 4 inches; dark brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; mildly alkaline; clear smooth boundary.

Bt1—4 to 9 inches; brown (7.5YR 4/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate coarse subangular blocky structure; hard, firm, sticky and plastic; common very fine and few fine roots; few fine tubular pores; few thin clay films on faces of peds and in pores; mildly alkaline; clear smooth boundary.

Bt2—9 to 19 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; hard, firm, slightly sticky and slightly plastic; common very fine and few fine roots; few fine pores; few thin clay films on faces of peds and in pores; moderately alkaline; clear smooth boundary.

Btk—19 to 37 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and few fine roots; few fine pores; few thin clay films in pores; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

BC—37 to 45 inches; strong brown (7.5YR 5/6) fine sandy loam, strong brown (7.5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; few very fine and fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bkb—45 to 60 inches; pinkish white (7.5YR 8/2) gravelly sandy loam, light brown (7.5YR 6/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; 20 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has value of 4 or 5 when dry and 3 or 4 when moist. Texture is fine sandy loam or fine sand.

The Bt horizon has hue of 5YR or 7.5YR, value of 4 to 6 when dry and 4 or 5 when moist, and chroma of 4 or 6 when dry and 3 to 6 when moist.

The BC horizon has chroma of 4 to 8 when dry.

The Bk horizon has hue of 5YR or 7.5YR, value of 7 or 8 when dry, and chroma of 4 to 6 when dry or moist. Texture is fine sandy loam, loam, or sandy clay loam.

The 2Bkb horizon, where present, has value of 6 or 7 when moist. Texture is sandy clay loam or gravelly sandy loam.

Pilabo Series

The soils in the Pilabo series are classified as loamy-skeletal, mixed, thermic Ustollic Camborthids. These deep, well drained, moderately permeable soils formed in colluvium and alluvium derived mainly from tuff and granite. They are on hogbacks and cuestas. Slope is 15 to 35 percent. Elevation is 5,000 to 6,250 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Pilabo very stony loam in an area of Laborcita-Pilabo-Lemitar complex, 5 to 45 percent slopes; about 14 miles southwest of Socorro, on the Pedro Armendaris Grant No. 34; 2,600 feet east and 650 feet south of the northwest corner of sec. 1, T. 6 S., R. 2 W. (projected).

A1—0 to 3 inches; dark brown (10YR 4/3) very stony loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, nonsticky and slightly plastic; few fine and very fine roots; 10 percent stones, 30 percent cobbles, and 20 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

Bw1—3 to 11 inches; dark brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine and very fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine roots; 30 percent cobbles and 25 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt wavy boundary.

Bw2—11 to 17 inches; brown (10YR 5/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to moderate very fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common medium and few fine roots; 10 percent stones, 30 percent cobbles, and 15 percent pebbles; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as few fine filaments; mildly alkaline; clear wavy boundary.

Bk—17 to 35 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and slightly plastic; few medium and common very fine roots; 40 percent cobbles and 15 percent pebbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as common soft masses, fine filaments, and seams and as pendants on the underside of rock fragments; moderately alkaline; gradual wavy boundary.

C—35 to 60 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine roots; 5 percent cobbles and 35 percent pebbles; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as common fine filaments and as pendants on the underside of rock fragments; mildly alkaline.

The profile is 35 to 60 percent rock fragments.

The Bw horizon has chroma of 2 to 4 when dry or moist. The Bk horizon has value of 6 or 7 when dry and 4 to 6 when moist, and it has chroma of 3 or 4 when dry or moist. Calcium carbonate equivalent ranges from 10 to 14 percent.

The C horizon has value of 6 or 7 when dry and 4 to 6 when moist, and it has chroma of 3 or 4 when dry or moist.

Pinon Series

The soils in the Pinon series are classified as loamy, mixed, mesic Lithic Ustollic Calciorthids. These very shallow and shallow, well drained, moderately slowly permeable soils formed in alluvium derived mainly from limestone. They are on knolls, cuestas, ridges, hills, and mesas. Slope is 1 to 30 percent. Elevation is 5,600 to 6,700 feet. The average annual precipitation is 10 to 15 inches. The average annual air temperature is 50 to 56 degrees F, and the frost-free period is 145 to 170 days.

Typical pedon of a Pinon channery fine sandy loam in an area of Pirodel-Harvey-Pinon complex, 1 to 15 percent slopes; about 5 miles west and 2 miles south of Gran Quivira; 2,025 feet east and 150 feet north of the southwest corner of sec. 10, T. 1 S., R. 7 E.

A—0 to 3 inches; dark brown (10YR 4/3) channery fine sandy loam, dark brown (10YR 3/3) moist; single grain; loose, slightly sticky and nonplastic; common very fine and few fine roots; 20 percent channery fragments and 10 percent flagstones; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk1—3 to 9 inches; brown (10YR 5/3) channery loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; 25 percent channery fragments and 5 percent flagstones; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk2—9 to 12 inches; brown (10YR 5/3) channery loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots and few coarse roots; 25 percent channery fragments and 5 percent flagstones; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk3—12 to 18 inches; light gray (10YR 7/2) channery loam, pale brown (10YR 6/3) moist; massive; hard, firm, slightly sticky and slightly plastic; common very fine roots and few fine, medium, and coarse roots; 20 percent channery fragments and 10 percent flagstones; violently effervescent; disseminated calcium carbonate; moderately alkaline; abrupt irregular boundary.

R—18 inches; limestone.

Depth to bedrock is 7 to 20 inches.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5 when dry, and chroma of 3 or 4 when dry or moist. Rock fragment content ranges from 10 to 35 percent.

The Bk horizon has hue of 7.5YR or 10YR, value of 5 to 8 when dry and 4 to 7 when moist, and chroma of 2 to 4 when dry or moist. Thin strata of loamy sand or loamy coarse sand are present in some areas. Rock fragment content ranges from 10 to 35 percent. Calcium carbonate equivalent is 15 to 35 percent.

Pirodel Series

The soils in the Pirodel series are classified as sandy, mixed, mesic Ustollic Calciorthids. These deep, well drained, moderately rapidly permeable soils formed in alluvial and eolian material. They are on fan terraces and upland plains. Slope is 1 to 15 percent. Elevation is 5,300 to 6,700 feet. The average annual precipitation is 10 to 15 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 150 to 180 days.

Typical pedon of Pirodel fine sand, 1 to 7 percent slopes; about 14 miles north of Bingham; 1,350 feet west and 1,175 feet north of the southeast corner of sec. 2, T. 2 S., R. 5 E.

A1—0 to 2 inches; light brown (7.5YR 6/4) fine sand, dark brown (7.5YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few fine roots; mildly alkaline; abrupt smooth boundary.

A2—2 to 9 inches; brown (7.5YR 5/4) fine sand, dark brown (7.5YR 4/4) moist; single grain; loose, nonsticky and nonplastic; common very fine roots; mildly alkaline; clear wavy boundary.

Bk1—9 to 18 inches; brown (7.5YR 5/4) fine sand, dark brown (7.5YR 4/4) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots; 5 percent pebbles; slightly effervescent; disseminated calcium carbonate and calcium carbonate segregated as few medium irregular soft masses; mildly alkaline; gradual smooth boundary.

Bk2—18 to 29 inches; brown (7.5YR 5/4) fine sand, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots and few fine and medium roots; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as common medium irregular soft masses; mildly alkaline; gradual wavy boundary.

2Bkb1—29 to 35 inches; pink (7.5YR 7/4) sandy loam, light brown (7.5YR 6/4) moist; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine roots; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated segregated in fine seams; moderately alkaline; abrupt wavy boundary.

2Bkb2—35 to 54 inches; pink (7.5YR 8/4) gravelly sandy loam, light brown (7.5YR 6/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine roots; 20 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

2Bkb3—54 to 60 inches; pink (7.5YR 8/4) gravelly loam, pink (7.5YR 7/4) moist; massive; hard, friable, slightly sticky and slightly plastic; 25 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has hue of 7.5YR or 10YR, value of 4 to 6 when dry and 3 or 4 when moist, and chroma of 3 to 6 when dry or moist.

The B horizon has hue of 7.5YR or 10YR, value of 5 or 6 when dry, and chroma of 3 or 4 when dry or moist. Texture of the fine earth fraction is fine sand, loamy sand, or loamy fine sand.

The buried B horizon has hue of 7.5YR or 10YR, value of 5 to 8 when dry and 3 to 7 when dry or moist, and chroma of 3 to 6 when dry or moist. Texture is sandy loam, gravelly sandy loam, loam, fine sandy loam, sandy clay loam, or gravelly sandy clay loam.

Ponciano Series

The soils in the Ponciano series are classified as fine, mixed, mesic Ustollic Camborthids. These deep, well drained, slowly permeable soils formed in colluvium and alluvium derived mainly from sandstone and mudstone. They are on cuestas and hillslopes below mesas and cuestas. Slope is 15 to 60 percent. Elevation is 5,600 to 6,600 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 52 to 57 degrees F, and the frost-free period is 160 to 180 days.

Typical pedon of Ponciano very bouldery clay loam, 15 to 60 percent slopes; about 22 miles east of Bernardo; east of gravel road to radio tower; 1,250 feet north and 900 feet west of the southeast corner of sec. 7, T. 2 N., R. 5 E.

A—0 to 3 inches; reddish brown (5YR 4/4) very bouldery clay loam, dark reddish brown (5YR 3/4) moist; weak thin platy structure parting to moderate very fine granular; soft, very friable, sticky and plastic; common fine and very fine roots; 20 percent channery fragments, 10 percent flagstones, 10 percent stones, and 5 percent boulders; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw1—3 to 11 inches; reddish brown (2.5YR 4/4) channery silty clay loam, dark reddish brown (2.5YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few coarse and medium roots, common fine roots, and many very fine roots; common very fine discontinuous irregularly shaped pores; 15 percent channery fragments and 5 percent pebbles; strongly effervescent; calcium carbonate coating the underside of rock fragments and segregated in few fine irregularly shaped seams; moderately alkaline; clear smooth boundary.

Bk1—11 to 24 inches; reddish brown (2.5YR 5/4) channery silty clay loam, reddish brown (2.5YR 4/4) moist; weak coarse subangular blocky structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; few coarse and medium roots, common fine roots, and many very fine roots; common very fine discontinuous irregularly shaped pores; 20 percent channery fragments and 5 percent pebbles; strongly effervescent; calcium carbonate coating rock fragments and segregated in common medium irregularly shaped seams and filaments; strongly alkaline; clear wavy boundary.

Bk2—24 to 35 inches; reddish brown (2.5YR 5/4) channery silty clay loam, reddish brown (2.5YR 4/4) moist; moderate coarse subangular blocky structure; very hard, firm, sticky and plastic; common fine and very fine roots; common very fine discontinuous irregularly shaped pores; 15 percent channery fragments and 5 percent pebbles; strongly effervescent; calcium carbonate completely coating rock fragments and segregated in common fine irregularly shaped seams and filaments; strongly alkaline; clear smooth boundary.

Bk4—35 to 42 inches; reddish brown (2.5YR 4/4) silty clay loam, dark red (2.5YR 3/6) moist; weak coarse subangular blocky structure; hard, friable, sticky and plastic; few fine and very fine roots; few very fine discontinuous irregularly shaped pores; 20 percent soft angular mudstone fragments, 5 percent channery fragments, and 5 percent pebbles; strongly effervescent; calcium carbonate segregated in few fine irregularly shaped filaments and in pores; moderately alkaline; clear smooth boundary.

Bk5—42 to 60 inches; reddish brown (2.5YR 4/4) silty clay loam, dark red (2.5YR 3/6) moist; weak medium and coarse subangular blocky structure; hard, friable, sticky and plastic; few fine and very fine roots; few very fine discontinuous irregularly shaped pores; 40 percent soft angular mudstone fragments, 5 percent channery fragments, and 5 percent pebbles; strongly effervescent; calcium carbonate segregated in few fine irregularly shaped filaments and in pores; moderately alkaline.

The profile is 35 to 50 percent clay. Calcium carbonate equivalent ranges from 5 to 15 percent throughout the profile. The control section is 10 to 30 percent rock fragments of sandstone and siltstone. Salinity ranges from 4 to 8 millimhos per centimeter.

The A horizon has hue of 2.5YR or 5YR. Texture is very bouldery clay loam or very stony silty clay loam.

The Bw horizon and the upper part of the Bk horizon have value of 4 or 5 when dry or 3 or 4 when moist. Texture of the fine earth fraction is silty clay loam or silty clay. Rock fragment content ranges from 15 to 35 percent.

The lower part of the Bk horizon has value of 4 or 5 when dry, and it has chroma of 4 to 6 when moist.

Popotosa Series

The soils in the Popotosa series are classified as fine-loamy over sandy or sandy-skeletal, mixed (calcareous), thermic Typic Torrifluvents. These deep, well drained, moderately slowly permeable soils formed in recent alluvium. They are on the Rio Grande flood plain. Slope is 0 to 1 percent. Elevation is 4,400 to 4,800 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Popotosa clay loam, 0 to 1 percent slopes; about 1 mile west of Las Nutrias; 1,780 feet east and 1,530 feet north of the southwest corner of sec. 25, T. 3 N., R. 1 E. (projected).

Ap—0 to 11 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 4/4) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots and few fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

C1—11 to 17 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

C2—17 to 29 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine roots; slightly effervescent; disseminated calcium carbonate; strongly alkaline; abrupt smooth boundary.

C3—29 to 60 inches; pale brown (10YR 6/3) sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline.

Depth to sandy material is 20 to 34 inches. Salinity ranges from 4 to 8 millimhos per centimeter.

The upper part of the C horizon is loam or clay loam.

Puertecito Series

The soils in the Puertecito series are classified as loamy-skeletal, mixed, mesic Lithic Ustollic Haplargids. These very shallow and shallow, well drained, moderately slowly permeable soils formed in alluvium and colluvium derived mainly from volcanic rock. They are on mountains and hills. Slope is 5 to 60 percent. Elevation is 5,200 to 7,500 feet. The average annual precipitation is 10 to 14 inches. The average annual air temperature is 47 to 57 degrees F, and the frost-free period is 145 to 180 days.

Typical pedon of a Puertecito very gravelly loam in an area of Puertecito-Rock outcrop complex, 5 to 55 percent slopes; about 5 miles southwest of Socorro; 1,450 feet north and 400 feet west of the southeast corner of sec. 6, T. 4 S., R. 1 W.

A—0 to 2 inches; dark brown (7.5YR 4/2) very gravelly loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; few fine roots; 30 percent pebbles and 10 percent cobbles; neutral; abrupt wavy boundary.

Bt—2 to 9 inches; dark brown (7.5YR 4/4) very gravelly loam, dark brown (7.5YR 3/4) moist; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; few thin clay films on faces of peds; 40 percent pebbles; neutral; clear wavy boundary.

Btk—9 to 14 inches; reddish brown (5YR 4/4) very gravelly clay loam, dark reddish brown (5YR 3/4) moist; weak very fine subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; few moderately thick clay films on faces of peds; 30 percent pebbles, 10 percent cobbles, and 5 percent stones; slightly effervescent; calcium carbonate as fine seams and as coatings on rock fragments; neutral; abrupt wavy boundary.

2R—14 inches; tuff.

Depth to bedrock ranges from 6 to 20 inches.

The A horizon has hue of 7.5YR or 10YR, and it has chroma of 2 or 3 when moist. Rock fragment content ranges from 35 to 60 percent.

The Bt horizon has hue of 7.5YR or 5YR, and it has value of 4 or 5 when dry and 3 or 4 when moist. Texture of the fine earth fraction is loam or clay loam. Rock fragment content ranges from 35 to 60 percent.

Puice Series

The soils in the Puice series are classified as loamy-skeletal, carbonatic, mesic Ustollic Calciorthids. These moderately deep, well drained, moderately permeable soils formed in alluvium derived mainly from interbedded limestone and gypsum. They are on knolls and ridges. Slope is 1 to 15 percent. Elevation is 5,700 to 6,500 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 50 to 56 degrees F, and the frost-free period is 150 to 170 days.

Typical pedon of a Puice channery loam in an area of Puice-Tanbark-Harvey association, 1 to 25 percent slopes; about 13 miles south of Claunch and 50 feet north and 25 feet east of cap marking the southeast corner of the southwest quarter of sec. 16, T. 4 S., R. 9 E.

A1—0 to 2 inches; brown (7.5YR 5/4) channery loam, dark brown (7.5YR 3/4) moist; weak thin platy structure and weak fine granular; soft, very friable, slightly sticky and slightly plastic; few fine and common very fine roots; 15 percent channery fragments, 5 percent flagstones, and 5 percent pebbles; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

A2—2 to 6 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; few fine and common very fine roots; 20 percent pebbles and 5 percent channery fragments; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk1—6 to 13 inches; white (10YR 8/2) very channery loam, very pale brown (10YR 7/3) moist; weak coarse and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few medium roots and common fine and very fine roots; 25 percent channery fragments and 10 percent flagstones; disseminated gypsum; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as common medium soft masses and as coatings on rock fragments; moderately alkaline; clear wavy boundary.

Bk2—13 to 23 inches; light gray (10YR 7/2) very channery loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few medium, fine, and very fine roots; 40 percent channery fragments and 10 percent flagstones; disseminated gypsum; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as common medium soft masses and as coatings on rock fragments; moderately alkaline; clear wavy boundary.

Bk3—23 to 28 inches; very pale brown (10YR 7/3) extremely channery loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; 45 percent channery fragments, 15 percent pebbles, and 5 percent flagstones; disseminated gypsum; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as common medium soft masses and as coatings on rock fragments; moderately alkaline; clear wavy boundary.

R—28 inches; limestone; somewhat fractured and can be chipped out, but chipped fragments are not coated with lime; roots matted on top of contact.

The calcium carbonate equivalent ranges from 40 to 85 percent, and depth to the calcic horizon is 2 to 12 inches. Gypsum content ranges from 5 to 15 percent. Clay content ranges from 10 to 25 percent in the 10- to 40-inch control section. Depth to bedrock is 20 to 40 inches.

Rayohill Series

The soils in the Rayohill series are classified as coarse-loamy, gypsic, mesic Typic Gypsiorthids. These moderately deep, well drained, moderately permeable soils formed in alluvium derived mainly from gypsum. They are on knolls, fan terraces, and pediments. Slope is 1 to 6 percent. Elevation is 5,600 to 6,300 feet. The average annual precipitation is 10 to 15 inches. The average annual air temperature is 52 to 57 degrees F, and the frost-free period is 150 to 180 days.

Typical pedon of a Rayohill fine sandy loam in an area of Rayohill-Clovis fine sandy loams, 1 to 6 percent slopes; about 1 mile southeast of Chupadera and 0.25 mile west of the junction of Canon Torcido and Chupadera Arroyo; 900 feet south and 1,700 feet west of the northeast corner of sec. 6, T. 1 S., R. 6 E.

A—0 to 1 inch; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 3/4) moist; weak thin platy structure parting to weak very fine granular; soft, very friable, slightly sticky and nonplastic; few very fine roots; strongly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

By1—1 to 13 inches; white (N 8/0) silt loam, pink (7.5YR 7/4) moist; weak medium subangular blocky structure; soft, friable, sticky and slightly plastic; common fine and very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

By2—13 to 25 inches; pink (7.5YR 8/4) loam, light brown (7.5YR 6/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few coarse and medium roots and common fine and very fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

BC—25 to 33 inches; reddish yellow (5YR 6/6) fine sandy loam, yellowish red (5YR 4/6) moist; weak medium subangular blocky structure; hard, firm, slightly sticky and nonplastic; few fine and very fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

2Cr—33 to 36 inches; weathered gypsum.

R—36 inches; hard gypsum.

Depth to gypsum is 20 to 40 inches. Depth to the gypsic horizon is 1 to 5 inches. The clay content between depths of 10 and 40 inches is less than 15 percent, and the content of sand that is fine textured or coarser is more than 15 percent.

The content of gypsum (by weight) in the gypsic horizon is 40 to 80 percent, and it decreases as depth increases. The calcium carbonate equivalent is 2 to 14 percent, and there is no horizon of secondary lime accumulation.

Rizozo Series

The soils in the Rizozo series are classified as loamy, mixed (calcareous), mesic Lithic Ustic Torriorthents. These shallow, well drained, moderately permeable soils formed in alluvial and eolian material derived mainly from siltstone and sandstone. They are on hills and dip slopes of cuestas. Slope is 1 to 15 percent. Elevation is 5,500 to 7,000 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 56 degrees F, and the frost-free period is 145 to 165 days.

Typical pedon of a Rizozo channery loam in an area of Rizozo-Alicia-Rock outcrop association, 1 to 30 percent slopes; about 8 miles north of Riley; 2,350 feet east and 300 feet north of the southwest corner of sec. 19, T. 3 N., R. 3 W.

A—0 to 4 inches; reddish brown (5YR 5/4) channery loam, reddish brown (5YR 4/4) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; 20 percent channery fragments and 5 percent flagstones; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C—4 to 12 inches; light reddish brown (2.5YR 6/4) channery silt loam, red (2.5YR 5/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; 20 percent channery fragments; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

R—12 inches; siltstone.

Depth to bedrock is 4 to 20 inches.

Rock fragment content of the C horizon is 15 to 35 percent.

The Rizozo soil in map unit 434 is a taxadjunct to the Rizozo series because it has less silt than is typical for the series. This difference, however, does not significantly affect use and management.

Royosa Series

The soils in the Royosa series are classified as mixed, mesic Typic Ustipsamments. These deep, excessively drained, very rapidly permeable soils formed in eolian sand deposits. They are on dunes and hummocks on plains, fan terraces, and alluvial fans. Slope is 1 to 6 percent. Elevation is 7,000 to 8,200 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of a Royosa sand in an area of Royosa-Loarc association, 1 to 5 percent slopes; about 18 miles west and 5 miles north of Magdalena; 2,500 feet east and 1,100 feet north of the southwest corner of sec. 33, T. 2 S., R. 7 W.

A—0 to 7 inches; brown (10YR 5/3) sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; mildly alkaline; gradual wavy boundary.

C1—7 to 26 inches; pale brown (10YR 6/3) coarse sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few very fine and medium roots; mildly alkaline; gradual irregular boundary.

C2—26 to 43 inches; pale brown (10YR 6/3) sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; common fine and medium roots and few very fine and coarse roots; mildly alkaline; clear wavy boundary.

C3—43 to 60 inches; brown (10YR 4/3) loamy sand, very dark grayish brown (10YR 3/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; mildly alkaline.

The A horizon has hue of 7.5YR or 10YR, value of 5 to 7 when dry and 3 or 4 when moist, and chroma of 3 or 4 when dry or moist. Texture is fine sand, sand, or loamy fine sand.

The C horizon has hue of 7.5YR or 10YR, value of 5 to 7 when dry and 4 or 5 when moist, and chroma of 2 to 6 when dry or moist. Texture is fine sand, loamy sand, coarse sand, or sand.

The Royosa soil in map unit 450 is taxadjunct to the Royosa series because it has small amounts of calcium carbonate, which is not typical for the Royosa series. This difference, however, does not significantly affect use and management.

Saneli Series

The soils in the Saneli series are classified as clayey over sandy or sandy-skeletal, montmorillonitic (calcareous), thermic Vertic Torrifluvents. These deep, well drained, very slowly permeable soils formed in recent alluvium. They are on the Rio Grande flood plain. Slope is 0 to 1 percent. Elevation is 4,400 to 4,800 feet. The average annual precipitation is 8 to 12 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Saneli clay, 0 to 1 percent slopes; about 2 miles north of Lemitar and 3/4 mile southeast of gravel pit; 200 feet north and 2,175 feet east of the southwest corner of sec. 35, T. 1 S., R. 1 W. (projected).

A—0 to 1 inch; brown (7.5YR 5/4) clay, brown (7.5YR 4/4) moist; weak medium platy structure parting to weak fine granular; slightly hard, friable, sticky and plastic; many very fine roots and few fine, medium, and coarse roots; few cracks 2 centimeters wide; slightly hard, very friable, sticky and plastic; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

Ap—1 to 9 inches; light brown (7.5YR 6/4) clay, brown (7.5YR 4/4) moist; weak medium granular structure; slightly hard, very friable, sticky and plastic; many very fine roots and few fine, medium, and coarse roots; few cracks 2 centimeters wide extending to lower boundary; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1—9 to 29 inches; light brown (7.5YR 6/4) clay, brown (7.5YR 5/4) moist; massive; hard, firm, sticky and very plastic; many very fine and fine roots and common medium and coarse roots; few cracks 2 centimeters wide extending to lower boundary; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

2C2—29 to 33 inches; very pale brown (10YR 7/4) loamy sand, light yellowish brown (10YR 6/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine, medium, and coarse roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

2C3—33 to 60 inches; very pale brown (10YR 8/3) sand, very pale brown (10YR 7/3) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline.

Thickness of clayey material is 15 to 30 inches. Salinity ranges from 4 to 8 millimhos per centimeter.

The A horizon has value of 5 or 6 when dry. Texture is silty clay or clay.

The upper part of the C horizon is clay or silty clay. The lower part is sand, fine sand, loamy sand, or loamy fine sand.

The Saneli soil in map unit 52 is a taxadjunct to the Saneli series because the depth to sand is less than 20 inches. This difference, however, does not significantly affect use and management.

San Mateo Series

The soils in the San Mateo series are classified as fine-loamy, mixed (calcareous), mesic Ustic Torrifluvents. These deep, well drained, moderately slowly permeable soils formed in alluvium derived dominantly from sandstone. They are in swales and drainageways and on alluvial fans. Slope is 0 to 5 percent. Elevation is 5,200 to 7,800 feet. The average annual precipitation is 0 to 13 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 150 to 180 days.

Typical pedon of a San Mateo sandy loam in an area of Mion-San Mateo-Rock outcrop association, 1 to 10 percent slopes; about 47 miles northwest of Magdalena; 250 feet north and 2,100 feet east of the southwest corner of sec. 15, T. 3 N., R. 8 W.

A1—0 to 2 inches; light yellowish brown (2.5Y 6/4) sandy loam, olive brown (2.5Y 4/4) moist; moderate thick platy structure parting to moderate very fine granular; soft, very friable, slightly sticky and nonplastic; few very fine and fine roots; 10 percent pebbles; mildly alkaline; abrupt smooth boundary.

A2—2 to 10 inches; yellowish brown (10YR 5/4) sandy clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and plastic; few very fine, fine, and medium roots; 10 percent pebbles; mildly alkaline; clear smooth boundary.

C1—10 to 23 inches; light olive brown (2.5Y 5/4) sandy clay loam, olive brown (2.5Y 4/4) moist; massive; hard, firm, slightly sticky and plastic; common very fine and few fine roots; 10 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; gradual smooth boundary.

C2—23 to 47 inches; light yellowish brown (2.5Y 6/4) sandy clay loam, olive brown (2.5Y 4/4) moist; massive; very hard, very firm, slightly sticky and plastic; few very fine and fine roots; 10 percent pebbles; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

C3—47 to 60 inches; light yellowish brown (2.5Y 6/4) clay loam, olive brown (2.5Y 4/4) moist; massive; very hard, very firm, sticky and plastic; few very fine, fine, and coarse roots; 10 percent pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has hue of 10YR or 2.5Y, value of 5 or 6 when dry and 4 or 5 when moist, and chroma of 3 or 4 when dry or moist. Texture is loam or sandy loam.

The C horizon has hue of 10YR or 2.5Y, value of 5 or 6 when dry and 3 or 4 when moist, and chroma of 3 or 4 when dry or moist. Texture is sandy clay loam, loam, or clay loam.

Sedillo Series

The soils in the Sedillo series are classified as loamy-skeletal, mixed, mesic Ustollic Haplargids. These deep, well drained, moderately slowly permeable soils formed in alluvium derived mainly from rhyolitic tuff, lava, and granite. They are on fan terraces and bajadas. Slope is 1 to 15 percent. Elevation is 5,200 to 7,000 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 145 to 180 days.

Typical pedon of a Sedillo very gravelly fine sandy loam in an area of Millett-Sedillo complex, 1 to 15 percent slopes; about 11 miles north of Magdalena; 1,500 feet south and 105 feet east of the northwest corner of sec. 6, T. 1 S., R. 3 W.

A—0 to 3 inches; brown (7.5YR 5/4) very gravelly fine sandy loam, dark brown (7.5YR 4/4) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; common fine vesicular and irregular pores; 40 percent pebbles and 5 percent cobbles; moderately alkaline; clear smooth boundary.

Bt1—3 to 10 inches; reddish brown (5YR 5/4) very gravelly clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; very hard, friable, sticky and slightly plastic; common fine roots; common very fine irregular pores; few thin clay films as bridges and in pores; 35 percent pebbles and 5 percent cobbles; moderately alkaline; clear smooth boundary.

Bt2—10 to 19 inches; brown (7.5YR 5/4) very gravelly sandy clay loam, dark brown (7.5YR 4/4) moist; weak coarse subangular blocky structure; hard, very friable, slightly sticky and nonplastic; common fine roots; common very fine irregular pores; few thin clay films as bridges and coating sand grains; 40 percent pebbles and 5 percent cobbles; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk1—19 to 36 inches; pink (7.5YR 7/4) very gravelly fine sandy loam, light brown (7.5YR 6/4) moist; massive; hard, very friable, nonsticky and nonplastic; few fine roots; common very fine irregular pores; 40 percent pebbles and 10 percent cobbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on coarse fragments; moderately alkaline; clear smooth boundary.

Bk2—36 to 60 inches; light brown (7.5YR 6/4) very gravelly fine sandy loam, brown (7.5YR 5/4) moist; massive; hard, very friable, nonsticky and nonplastic; common fine irregular pores; 40 percent pebbles and 10 percent cobbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as coatings on coarse fragments; moderately alkaline.

The A horizon has value of 4 or 5 when dry and 3 or 4 when moist. Rock fragment content ranges from 15 to 45 percent.

The Bt horizon has hue of 7.5YR or 5YR, and it has value of 4 or 5 when dry and 3 or 4 when moist. The fine earth fraction is sandy clay loam or clay loam that is 35 to 60 percent rock fragments. The Bk horizon has value of 6 or 7 when dry and 5 or 6 when moist, and it has chroma of 4 to 6 when dry. The fine earth fraction is loam, sandy clay loam, or fine sandy loam that is 35 to 50 percent rock fragments.

Socorro Series

The soils in the Socorro series are classified as loamy-skeletal, carbonatic, mesic Ustollic Calciorthids. These moderately deep, well drained, moderately permeable soils formed in alluvium derived mainly from basalt and calcareous loess. They are on knolls on basalt lava flows. Slope is 1 to 8 percent. Elevation is 5,400 to 6,600 feet. The average annual precipitation is 10 to 15 inches. The average annual air temperature is 52 to 57 degrees F, and the frost-free period is 140 to 180 days.

Typical pedon of Socorro very gravelly loam, 1 to 8 percent slopes; about 3 miles south and 20 miles east of Bingham; 1,100 feet east and 900 feet north of the southwest corner of sec. 29, T. 5 S., R. 9 E.

A—0 to 3 inches; grayish brown (10YR 5/2) very gravelly loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; few fine and very fine roots; 15 percent basalt cobbles and 30 percent basalt pebbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

Bw—3 to 10 inches; brown (10YR 5/3) very cobbly loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; 10 percent basalt stones, 20 percent cobbles, and 20 percent basalt pebbles; strongly effervescent; thin calcium carbonate coatings on pebbles; strongly alkaline; gradual wavy boundary.

Bk—10 to 28 inches; very pale brown (10YR 8/3) extremely stony loam, very pale brown (10YR 7/3) moist; massive; hard, firm, slightly sticky and nonplastic; few very fine roots; 70 percent basalt stones and 10 percent basalt pebbles; strongly effervescent; thick calcium carbonate coatings on rock fragments; strongly alkaline; abrupt irregular boundary.

R—28 inches; basalt with calcium carbonate coatings on upper surface.

Depth to bedrock ranges from 20 to 40 inches.

The A horizon has hue of 7.5YR or 10YR, and it has chroma of 2 to 4 when dry and 3 or 4 when moist. The fine earth fraction is loam or fine sandy loam that is 35 to 60 percent rock fragments.

The Bw horizon has hue of 7.5YR or 10YR, value of 4 to 6 when dry and 3 to 5 when moist, and chroma of 3 to 5 when dry or moist. Rock fragment content ranges from 35 to 80 percent.

Sparank Series

The soils in the Sparank series are classified as fine, mixed (calcareous), mesic Ustic Torrifluvents. These deep, well drained, very slowly permeable soils formed in alluvium derived mainly from shale. They are on alluvial fans and in swales. Slope is 0 to 2 percent. Elevation is 6,000 to 6,700 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 53 to 56 degrees F, and the frost-free period is 150 to 160 days.

Typical pedon of Sparank silty clay loam, 0 to 2 percent slopes; about 37 miles northwest of Magdalena and 1 mile east of Pueblo Viejo Mesa; 1,550 feet east and 2,500 feet south of the northwest corner of sec. 16, T. 4 N., R. 7 W.

A—0 to 2 inches; light brownish gray (2.5Y 6/2) silty clay loam, olive brown (2.5Y 4/4) moist; moderate thin platy structure parting to moderate very fine granular; slightly hard, friable, slightly sticky and plastic; common medium and fine roots and few very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1—2 to 28 inches; light brownish gray (2.5Y 6/2) silty clay loam, olive brown (2.5Y 4/4) moist; moderate very thick platy structure; hard, friable, slightly sticky and plastic; few medium and very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C2—28 to 33 inches; light brownish gray (2.5Y 6/2) clay loam, olive brown (2.5Y 4/4) moist; massive; hard, friable, sticky and plastic; few medium and very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

C3—33 to 60 inches; light brownish gray (2.5Y 6/2) silty clay, olive brown (2.5Y 4/4) moist; massive; slightly hard, friable, slightly sticky and plastic; few medium and very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The C horizon is stratified silty clay loam, silty clay, and clay loam and is 35 to 60 percent clay.

Tanbark Series

The soils in the Tanbark series are classified as loamy, gypsic, mesic, shallow Ustic Torriorthents. These very shallow and shallow, well drained, moderately permeable soils formed in alluvium derived mainly from gypsum and limestone. They are on knolls, hogbacks, ridges, hills, canyons, cuestas, pediments, and mesa escarpments. Slope is 1 to 80 percent. Elevation is 5,400 to 7,200 feet. The average annual precipitation is 10 to 15 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 145 to 180 days.

Typical pedon of a Tanbark silt loam in an area of Puice-Tanbark-Harvey association, 1 to 25 percent slopes; about 15 miles southwest of Claunch; 1,200 feet east and 2,800 feet south of the northwest corner of sec. 12, T. 4 S., R. 8 E.

A—0 to 2 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; strongly effervescent; disseminated calcium carbonate; strongly alkaline; abrupt smooth boundary.

C—2 to 13 inches; very pale brown (10YR 8/3) silt loam, very pale brown (10YR 7/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt wavy boundary.

Cr—13 inches; white (10YR 8/1) gypsum.

Salinity ranges from 0 to 8 millimhos per centimeter. Depth to bedrock is 4 to 20 inches.

The A horizon has hue of 7.5YR or 10YR, value of 5 to 7 when dry and 4 to 6 when moist, and chroma of 3 or 4 when dry or moist. Texture is silt loam, sandy loam, fine sandy loam, very fine sandy loam, or channery loam.

The C horizon has hue of 7.5YR, 10YR, or neutral, value of 5 to 8 when dry and 4 to 8 when moist, and chroma of 0 to 4 when dry and 2 to 4 when moist. Texture is silt loam, loam, or sandy loam.

Telescope Series

The soils in the Telescope series are classified as coarse-loamy, mixed, mesic Aridic Ustochrepts. These deep, well drained, moderately rapidly permeable soils formed in alluvial and eolian material. They are on plains. Slope is 1 to 2 percent. Elevation is 7,000 to 7,500 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 54 degrees F, and the frost-free period is 120 to 160 days.

Typical pedon of a Telescope loamy fine sand in an area of Telescope-Royosa association, 1 to 3 percent slopes; about 18 miles west and 7 miles north of Magdalena; 1,350 feet west and 250 feet north of the southeast corner of sec. 13, T. 1 S., R. 8 W.

A—0 to 3 inches; brown (7.5YR 5/2) loamy fine sand, brown (7.5YR 4/2) moist; single grain; loose, nonsticky and nonplastic; few fine roots; neutral; abrupt smooth boundary.

Bw—3 to 19 inches; brown (7.5YR 5/2) fine sandy loam, brown (7.5YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine and very fine roots; about 10 percent pebbles; mildly alkaline; gradual wavy boundary.

Bk1—19 to 45 inches; pinkish gray (7.5YR 6/2) fine sandy loam, brown (7.5YR 5/2) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few very fine roots; about 10 percent gravel; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk2—45 to 60 inches; pinkish gray (7.5YR 7/2) loamy fine sand, brown (7.5YR 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; 5 percent pebbles; strongly effervescent; disseminated calcium carbonate; mildly alkaline.

Thunderbird Series

The soils in the Thunderbird series are classified as fine, montmorillonitic, mesic Aridic Argiustolls. These moderately deep, well drained, slowly permeable soils formed in alluvium derived mainly from basalt. They are on plains of basalt-capped mesas. Slope is 1 to 10 percent. Elevation is 8,000 to 8,200 feet. The average annual precipitation is 12 to 15 inches. The average annual air temperature is 47 to 51 degrees F, and the frost-free period is 115 to 130 days.

Typical pedon of Thunderbird gravelly loam, 1 to 10 percent slopes; about 20 miles northeast of Datil, on Wiley Mesa; 625 feet east and 2,100 feet south of the northwest corner of sec. 17, T. 4 N., R. 8 W.

A1—0 to 2 inches; brown (7.5YR 5/2) gravelly loam, dark brown (7.5YR 3/2) moist; moderate medium platy structure parting to moderate very fine granular; soft, very friable, slightly sticky and slightly plastic; common fine and very fine roots; 15 percent pebbles and 5 percent cobbles; neutral; clear smooth boundary.

A2—2 to 6 inches; brown (7.5YR 5/2) gravelly loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and plastic; common fine and very fine roots; 10 percent pebbles and 5 percent cobbles; neutral; clear smooth boundary.

Bt1—6 to 10 inches; brown (7.5YR 4/2) gravelly clay loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and very fine roots; few thin clay films on faces of peds; 10 percent pebbles and 5 percent cobbles; neutral; abrupt smooth boundary.

Bt2—10 to 16 inches; brown (7.5YR 4/2) clay, dark brown (7.5YR 3/4) moist; moderate medium prismatic structure parting to moderate coarse subangular blocky; very hard, very firm, sticky and plastic; common medium and very fine roots; common thin clay films on faces of peds; 5 percent pebbles and 5 percent cobbles; neutral; clear smooth boundary.

Bt3—16 to 21 inches; brown (7.5YR 4/2) clay, brown (7.5YR 4/4) moist; strong coarse angular blocky structure; very hard, very firm, sticky and very plastic; few medium and very fine roots; few thin clay films on faces of peds; 5 percent pebbles and 5 percent cobbles; mildly alkaline; clear wavy boundary.

Bt4—21 to 29 inches; brown (7.5YR 4/2) gravelly clay, brown (7.5YR 4/4) moist; moderate coarse subangular blocky structure; very hard, very firm, sticky and plastic; few medium and very fine roots; few thin clay films on faces of peds; 10 percent pebbles and 5 percent cobbles; slightly effervescent; calcium carbonate segregated as few medium soft masses; mildly alkaline; abrupt wavy boundary.

R—29 inches; basalt.

Depth to bedrock and to the base of the Bt horizon is 20 to 40 inches.

The Thunderbird soils in this survey area are taxadjunct to the Thunderbird series because they are at a higher elevation and have a shorter growing season than is typical for the series. These differences, however, do not significantly affect use and management.

Torriorthents, ustic

Torriorthents, ustic, are very shallow to deep, well drained, rapidly permeable to very slowly permeable soils that formed in colluvial and eolian material derived from sedimentary and igneous rock. These soils are on hills, buttes, mountains, cuestas, escarpments, canyons, and hogbacks. Slope is 1 to 60 percent. Elevation is 5,400 to 8,000 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 140 to 180 days.

Reference profile of Torriorthents, ustic, extremely stony sandy clay loam in an area of Torriorthents, ustic-Rock outcrop complex, 10 to 60 percent slopes; 4 miles west and 2 miles south of Socorro; 1,000 feet west and 850 feet north of the southeast corner of sec. 30, T. 3 S., R. 1 W.

A—0 to 2 inches; brown (7.5YR 5/4) extremely stony sandy clay loam, brown (7.5YR 4/4) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; 45 percent pebbles, 20 percent cobbles, and 10 percent stones; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1—2 to 16 inches; strong brown (7.5YR 5/6) clay, strong brown (7.5YR 4/6) moist; weak coarse prismatic structure parting to strong coarse subangular blocky; very hard, firm, very sticky and very plastic; common very fine and few fine roots; few cracks 1 to 2 centimeters wide; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

C2—16 to 60 inches; strong brown (7.5YR 5/6) clay, strong brown (7.5YR 4/6) moist; strong coarse prismatic structure; very hard, very firm, very sticky and very plastic; few very fine roots; few cracks 1 to 2 centimeters wide extend to a depth of 60 inches; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The profile is 1 to 60 inches thick. Hue is 2.5Y to 2.5YR. The fine earth fraction ranges from sand to clay and is 0 to 80 percent rock fragments. Reaction is neutral to strongly alkaline.

Travessilla Series

The soils in the Travessilla series are classified as loamy, mixed (calcareous), mesic Lithic Ustic Torriorthents. These very shallow and shallow, well drained, moderately rapidly permeable soils formed in alluvial and eolian material derived mainly from sandstone. They are on cuestas and small mesas. Slope is 1 to 10 percent. Elevation is 6,000 to 8,000 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 56 degrees F, and the frost-free period is 150 to 160 days.

Typical pedon of a Travessilla gravelly fine sandy loam in an area of Rock outcrop-Travessilla complex, 1 to 10 percent slopes; about 37 miles northwest of Magdalena and 0.75 mile south of Pueblo Viejo Mesa; 1,525 feet east and 2,050 feet south of the northwest corner of sec. 20, T. 4 N., R. 7 W.

A—0 to 3 inches; light yellowish brown (10YR 6/4) gravelly fine sandy loam, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few fine and common very fine roots; 20 percent pebbles; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

C1—3 to 8 inches; brown (10YR 5/3) gravelly fine sandy loam, brown (10YR 4/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and nonplastic; few medium and fine roots and many very fine roots; 20 percent pebbles and 5 percent cobbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C2—8 to 13 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; few medium and fine roots and many very fine roots; 20 percent pebbles and 5 percent cobbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

R—13 inches; hard sandstone.

Depth to sandstone is 6 to 20 inches.

The A horizon has is 0 to 5 percent cobbles and 15 to 25 percent pebbles.

The C horizon is 10 to 30 percent pebbles and cobbles.

Turney Series

The soils in the Turney series are classified as fine-loamy, mixed, thermic Typic Calciorthids. These deep, well drained, moderately permeable soils formed in alluvial and eolian material. They are on bajadas and plains. Slope is 1 to 5 percent. Elevation is 4,400 to 5,600 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Turney loam, 1 to 5 percent slopes; 6 miles east and 24 miles south of San Antonio; 2,250 feet north and 200 feet west of the southeast corner of sec. 32, T. 8 S., R. 2 E.

A—0 to 4 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak medium platy structure; hard, firm, slightly sticky and slightly plastic; few fine, medium, and coarse roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

Bw—4 to 7 inches; reddish brown (5YR 5/3) loam, reddish brown (5YR 4/3) moist; moderate medium subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

Bk1—7 to 11 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots and common medium roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk2—11 to 20 inches; brown (7.5YR 5/4) clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few fine and common very fine roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk3—20 to 26 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 5/4) moist; massive; hard, firm, sticky and plastic; few fine and medium roots; violently effervescent; weakly cemented calcium carbonate segregated in many rounded medium hard masses and concretions; moderately alkaline; clear wavy boundary.

Bk4—26 to 45 inches; pink (7.5YR 7/4) loam, light brown (7.5YR 6/4) moist; massive; hard, friable, sticky and slightly plastic; few very fine roots; violently effervescent; calcium carbonate segregated in common rounded medium soft masses and firm concretions; strongly alkaline; gradual wavy boundary.

Bk5—45 to 60 inches; pinkish white (7.5YR 8/2) loam, pink (7.5YR 7/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; violently effervescent; weakly cemented with calcium carbonate; moderately alkaline.

The A horizon has hue of 7.5YR or 10YR, value of 5 or 6 when dry, and chroma of 3 or 4 when dry or moist. Texture is loam or loamy sand.

The B horizon has hue of 5YR or 7.5YR, value of 5 to 8 when dry and 4 to 7 when moist, and chroma of 2 to 4 when dry. is loam, sandy clay loam, clay loam, or sandy loam and is more than 18 percent clay.

Turney Variant

The soils in the Turney Variant are classified as fine-loamy, mixed, thermic Typic Calciorthids. These deep, well drained, moderately permeable soils formed in alluvium derived mainly from rhyolite and river deposits. They are on bajadas and fan terraces. Slope is 1 to 7 percent. Elevation is 4,650 to 4,925 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of Turney Variant gravelly sandy loam, 1 to 7 percent slopes; about 0.5 mile southwest of the New Mexico Institute of Mining and Technology in the city of Socorro; 1,200 feet north and 1,100 feet east of the southwest corner of sec. 11, T. 3 S., R. 1 W. (projected).

A—0 to 2 inches; light brown (7.5YR 6/4) gravelly sandy loam, brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; few fine and very fine roots; strongly effervescent; disseminated calcium carbonate; 25 percent pebbles and 5 percent cobbles; moderately alkaline; clear smooth boundary.

Bk1—2 to 8 inches; light brown (7.5YR 6/4) gravelly sandy clay loam, brown (7.5YR 4/4) moist, weak fine subangular blocky structure; soft, very friable, sticky and plastic; common very fine roots; strongly effervescent; disseminated calcium carbonate; 25 percent pebbles and 5 percent cobbles; mildly alkaline; clear smooth boundary.

Bk2—8 to 14 inches; pink (7.5YR 7/4) gravelly loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots and few fine and medium roots; violently effervescent; disseminated calcium carbonate; 25 percent pebbles and 5 percent cobbles; moderately alkaline; clear smooth boundary.

Bk3—14 to 26 inches; pinkish white (7.5YR 8/2) gravelly loam, pink (7.5YR 7/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few medium, fine, and very fine roots; violently effervescent; disseminated calcium carbonate; 25 percent pebbles and 5 percent cobbles; moderately alkaline; clear wavy boundary.

Bk4—26 to 35 inches; pink (7.5YR 8/4) gravelly sandy clay loam, light brown (7.5YR 6/4) moist; weak coarse and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; strongly effervescent; disseminated calcium carbonate; strongly alkaline; clear wavy boundary.

BC—35 to 49 inches; light brown (7.5YR 6/4) gravelly sandy loam, brown (7.5YR 4/4) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; strongly effervescent; disseminated calcium carbonate; 25 percent pebbles and 5 percent cobbles; strongly alkaline; clear irregular boundary.

C—49 to 60 inches; pink (7.5YR 7/4) very gravelly loamy sand, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; violently effervescent; disseminated calcium carbonate; 40 percent pebbles; strongly alkaline.

The Bk horizon has value of 6 to 8 when dry and 4 to 7 when moist, and it has chroma of 2 to 6 when dry or moist. It is sandy clay loam, loam, or clay loam 15 to 30 percent rock fragments.

The C horizon has value of 6 or 7 when dry and 4 or 5 when moist. is sandy loam, loam, sandy clay loam, or loamy sand and is 15 to 40 percent rock fragments.

Typic Camborthids

Typic Camborthids are shallow to deep, well drained, moderately rapidly permeable to moderately slowly permeable soils that formed in alluvium and colluvium derived from sandstone, conglomerate, and mudstone. These soils are on bajadas and dissected fan terraces. Slope is 15 to 50 percent. Elevation is 4,600 to 5,200 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Reference pedon of Typic Camborthids extremely channery sandy loam in an area of Typic Camborthids-Nolam association, 2 to 50 percent slopes; about 5 miles northeast of Socorro, near Arroyo de los Pinos; 750 feet north and 2,000 feet east of the southwest corner of sec. 27, T. 2 S., R. 1 E.

A—0 to 5 inches; yellowish red (5YR 5/6) extremely channery sandy loam, yellowish red (5YR 4/6) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common fine and very fine roots; 45 percent channery fragments and 20 percent cobbles and flagstones; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw—5 to 13 inches; yellowish red (5YR 5/6) very gravelly sandy loam, yellowish red (5YR 4/6) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; common fine and few very fine roots; 35 percent pebbles and 5 percent cobbles; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

Bk—13 to 25 inches; yellowish red (5YR 4/6) very gravelly sandy clay loam, reddish brown (5YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine and very fine roots; 45 percent pebbles and 10 percent cobbles; strongly effervescent; calcium carbonate segregated as coatings on the underside of rock fragments; moderately alkaline; clear smooth boundary.

Cr—25 inches; weathered sandstone that grades into hard conglomerate as depth increases.

Depth to bedrock ranges from 15 to 60 inches. Calcium carbonate equivalent in the fine earth fraction ranges from 5 to 15 percent.

The surface layer is 35 to 70 percent channery fragments, pebbles, cobbles, and flagstones.

The subsoil and substratum are 5 to 70 percent rock fragments.

Typic Ustifluvents

Typic Ustifluvents are deep, somewhat poorly drained to well drained, very rapidly permeable to very slowly permeable soils that formed in recent alluvium derived from mixed sources. These soils are in undeveloped areas of the Rio Grande flood plain, adjacent to the river channel. Slope is 0 to 2 percent. Elevation is 4,400 to 4,800 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Reference pedon of Typic Ustifluvents fine sand in an area of Typic Ustifluvents, 0 to 2 percent slopes, about 0.75 mile north of U.S. Highway 60, on the east bank of the Rio Grande, and about 0.10 mile west of the levee road; 2,450 feet south and 700 feet east of the northwest corner of sec. 1, T. 2 N., R. 1 E. (projected).

A—0 to 2 inches; light brown (7.5YR 6/4) fine sand, dark brown (7.5YR 3/4) moist; single grain; loose, nonsticky and nonplastic; few fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

C1—2 to 6 inches; brown (7.5YR 5/4) clay, dark brown (7.5YR 4/4) moist; massive; very hard, firm, very sticky and very plastic; common medium and coarse roots and few fine roots; common fine salt crystals; strongly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

C2—6 to 11 inches; light brown (7.5YR 6/4) silty clay loam, brown (7.5YR 5/4) moist; massive; hard, firm, sticky and plastic; few fine and medium roots; strongly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt smooth boundary.

C3—11 to 20 inches; light brown (7.5YR 6/4) fine sand, brown (7.5YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few fine and medium roots; strongly effervescent; disseminated calcium carbonate; mildly alkaline; gradual smooth boundary.

C4—20 to 39 inches; pink (7.5YR 7/4) fine sandy loam, brown (7.5YR 5/4) moist; few fine faint light brown (7.5YR 6/4) mottles, brown (7.5YR 4/4) moist; massive; loose, nonsticky and nonplastic; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

C5—39 to 47 inches; light brown (10YR 6/4) loam, light brown (10YR 6/4) moist; common fine distinct brown (7.5YR 5/4) mottles, dry or moist; massive; hard, friable, slightly sticky and nonplastic; strongly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt wavy boundary.

C6—47 to 60 inches; light brown (10YR 6/4) fine sand, brown (10YR 5/4) moist; few fine faint brown (7.5YR 5/4) mottles, brown (7.5YR 4/4) moist; single grain; loose, nonsticky and nonplastic; slightly effervescent; disseminated calcium carbonate; mildly alkaline.

The C horizon is sand to clay and is 0 to 60 percent rock fragments.

Wink Series

The soils in the Wink series are classified as coarse-loamy, mixed, thermic Typic Calciorthids. These deep, well drained, moderately rapidly permeable soils formed in eolian material and alluvium. They are on plains, bajadas, and fan terraces. Slope is 1 to 8 percent. Elevation is 4,400 to 5,600 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 62 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Wink fine sand in an area of Wink-Pajarito complex, 1 to 8 percent slopes; about 20 miles southeast of San Antonio; 3,200 feet north and 550 feet east of the southwest corner of sec. 1, T. 8 S., R. 1 E.

A—0 to 2 inches; light brown (7.5YR 6/4) fine sand, brown (7.5YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; mildly alkaline; abrupt wavy boundary.

Bw—2 to 11 inches; light brown (7.5YR 6/4) sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; few very fine roots; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear smooth boundary.

Bk1—11 to 21 inches; light brown (7.5YR 6/4) sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and common fine roots; strongly effervescent; calcium carbonate segregated as common fine soft masses; mildly alkaline; gradual wavy boundary.

Bk2—21 to 37 inches; pink (7.5YR 7/4) sandy loam, light brown (7.5YR 6/4) moist; weak very fine subangular blocky structure; hard, firm, nonsticky and slightly plastic; few very fine and medium roots; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated into weakly cemented lenses and into concretions; moderately alkaline; abrupt smooth boundary.

Bk3—37 to 57 inches; pinkish white (7.5YR 8/2) sandy loam, pink (7.5YR 7/4) moist; weak very fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine roots; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated into weakly cemented lenses and into concretions; moderately alkaline; clear wavy boundary.

Bk4—57 to 60 inches; pinkish white (7.5YR 8/2) sandy loam, light brown (7.5YR 6/4) moist; massive; slightly hard, friable, nonsticky and slightly plastic; violently effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has value of 5 or 6 when dry. Texture is fine sand or loamy sand.

The Bw horizon has value of 4 to 6 when dry and 3 or 4 when moist. The Bk horizon has value of 6 to 8 when dry and 4 to 7 when moist, and it has chroma of 2 or 4 when dry. It is sandy loam, fine sandy loam, or loam and is less than 18 percent clay.

Winona Series

The soils in the Winona series are classified as loamy-skeletal, carbonatic, mesic Lithic Ustollic Calciorthids. These very shallow and shallow, well drained, moderately permeable soils formed in alluvium derived mainly from limestone. They are on cuestas and hills. Slope is 1 to 45 percent. Elevation is 5,400 to 7,100 feet. The average annual precipitation is 10 to 13 inches. The average annual air temperature is 50 to 57 degrees F, and the frost-free period is 145 to 180 days.

Typical pedon of a Winona very flaggy loam in an area of Harvey-Winona-Tanbark association, 1 to 45 percent slopes; about 27 miles northwest of Bernardo; 2,500 feet east and 2,050 feet south of the northwest corner of sec. 16, T. 4 N., R. 4 W.

A—0 to 2 inches; brown (7.5YR 5/4) very flaggy loam, dark brown (7.5YR 3/4) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and few very fine roots; 20 percent flagstones and 35 percent channery fragments; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk1—2 to 8 inches; brown (7.5YR 5/4) very cobbly loam, brown (7.5YR 4/4) moist; weak coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common fine and very fine roots; 20 percent cobbles and 20 percent pebbles; strongly effervescent; disseminated calcium carbonate and calcium carbonate segregated as few fine soft masses and as coatings on rock fragments; moderately alkaline; clear wavy boundary.

Bk2—8 to 12 inches; light brown (7.5YR 6/4) very gravelly loam, brown (7.5YR 4/4) moist; weak coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common fine and very fine roots; 10 percent cobbles and 35 percent pebbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as common medium soft masses and as coatings on rock fragments; moderately alkaline; clear smooth boundary.

Bk3—12 to 17 inches; light brown (7.5YR 6/4) very gravelly loam, brown (7.5YR 5/4) moist; massive; soft, friable, slightly sticky and slightly plastic; few fine and very fine roots; 5 percent cobbles and 40 percent pebbles; violently effervescent; disseminated calcium carbonate and calcium carbonate segregated as common medium soft masses and as coatings on rock fragments; moderately alkaline; abrupt smooth boundary.

R—17 inches; limestone coated with calcium carbonate.

Depth to limestone is 7 to 20 inches.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5 when dry and 3 or 4 when moist, and chroma of 3 or 4 when dry and 2 to 4 when moist. Texture is very flaggy loam, very channery loam, or very channery fine sandy loam.

The Bk horizon has hue of 7.5YR or 10YR, value of 5 to 7 when dry and 3 to 5 when moist, and chroma of 3 or 4 when moist or dry. The fine earth fraction is loam that is 35 to 60 percent rock fragments.

Yesum Series

The soils in the Yesum series are classified as coarse-loamy, gypsic, thermic Typic Gypsiorthids. These deep, well drained, moderately permeable soils formed in alluvium derived mainly from gypsum and eolian material. They are on bajadas, knolls, basin floors, and fan terraces. Slope is 0 to 6 percent. Elevation is 4,650 to 5,700 feet. The average annual precipitation is 8 to 10 inches. The average annual air temperature is 57 to 64 degrees F, and the frost-free period is 180 to 210 days.

Typical pedon of a Yesum loamy very fine sand in an area of Campana-Yesum association, 1 to 6 percent slopes; about 18 miles east and 6 miles south of Socorro; 650 feet west and 250 feet south of the northeast corner of sec. 13, T. 4 S., R. 3 E.

A—0 to 1 inch; light brown (7.5YR 6/4) loamy very fine sand, brown (7.5YR 4/4) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; strongly effervescent; disseminated calcium carbonate; mildly alkaline; abrupt wavy boundary.

2By1—1 to 14 inches; white (N 8/0) loam, pinkish white (7.5YR 8/2) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots and few fine, medium, and coarse roots; 5 percent pebbles; secondary gypsum segregated in many fine soft masses of very fine crystals and weakly cemented masses; slightly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

2By2—14 to 25 inches; pinkish white (7.5YR 8/2) loam, pink (7.5YR 7/4) moist; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; 5 percent pebbles; secondary gypsum segregated in many fine soft masses of very fine crystals and weakly cemented masses; strongly effervescent; disseminated calcium carbonate; mildly alkaline; clear wavy boundary.

2By3—25 to 37 inches; pinkish gray (7.5YR 7/2) very fine sandy loam, light brown (7.5YR 6/4) moist; moderate coarse subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; 5 percent pebbles; secondary gypsum segregated in many fine soft masses of very fine crystals and weakly cemented masses; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

2By4—37 to 51 inches; pink (5YR 7/3) very fine sandy loam, reddish brown (5YR 5/4) moist; weak medium and coarse subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine and fine roots; 5 percent pebbles; secondary gypsum is segregated as pendants on the underside of pebbles and in many fine soft masses of fine crystals; violently effervescent; moderately alkaline; gradual wavy boundary.

2BCy—51 to 60 inches; pink (5YR 7/3) fine sandy loam, light reddish brown (5YR 6/4) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few very fine and fine roots; 5 percent pebbles; secondary gypsum segregated in common fine soft masses of fine crystals; violently effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has value of 5 or 6 when dry, and it has chroma of 3 or 4 when moist. Texture is loamy very fine sand, very fine sandy loam, or fine sand.

The By horizon has hue of neutral or 7.5YR, value of 7 or 8 when dry and 5 to 8 when moist, and chroma of 0 to 4 when dry and 2 to 4 when moist. Texture is loamy very fine sand, very fine sandy loam, fine sandy loam, or loam. The BCy material has hue of 7.5YR to 10YR and neutral, value of 7 or 8 when dry and 6 to 8 when moist, and chroma of 0 to 4 when dry or moist. Texture is loamy very fine sand, very fine sandy loam, or fine sandy loam.

Formation of the Soils

This section discusses the factors of soil formation, relates them to the formation of soils in the survey area, and explains processes of soil formation.

Soil is the collection of natural bodies on the Earth's surface. Soil is capable of supporting plants and has properties that are the result of the integrated effects of climate and living organisms acting upon parent material that are conditioned by topography over a period of time (*15*). The characteristics of a soil at a given location are determined by the physical and chemical properties and mineralogy of its parent material, the climatic factors under which the soil material has accumulated or has been deposited, the plant and animal life on and in the soil, the topography, and the length of time involved. These factors are extremely complex. The effect of any one factor is hard to isolate and identify, and the interactions among the factors is important to the nature of the soil. It is convenient, however, to discuss these factors separately and to indicate some of their probable effects on soil formation. These factors are discussed in the following pages.

Parent Material

Parent material refers to the unconsolidated organic and mineral materials in which soils form (*13*). Mineral materials are formed by the physical and chemical weathering of consolidated or weakly consolidated rocks, which are present in geologic formations of igneous, metamorphic, or sedimentary origin. The unconsolidated materials remain in place or are moved across the Earth's surface by wind, water, or gravity. The composition of these materials is highly variable, and they have a strong effect on the kind of soil that develops and on the rate at which development takes place. The nature of the parent materials affects or determines the texture, structure, consistency, color, erodibility, and natural fertility of the soils.

The soils in this survey area formed in parent materials that were derived from a variety of rocks and related deposits (*8, 10, 11*). Some examples of the igneous and metamorphic rocks in the area are the ancient granite and schist exposed in the Ladron and Los Pinos Mountains. Other igneous rocks are the relatively recent, volcanically formed rhyolitic tuff and basaltic lava flows. Sedimentary rocks, such as limestone, gypsum, sandstone, shale, and conglomerate, are present in formations of various ages. In some parts of the survey area, the source of most of the parent materials is dominated by certain rock formations (*10, 11*). For example, general soil map units 2, 3, and 4 are dominated by tertiary volcanic rocks and units 12 and 13 are dominated by Permian sedimentary rocks.

The main parent materials of the soils in this survey area are alluvial, colluvial, and eolian material. These materials are briefly described in the following paragraphs.

Alluvium is sediment that has been moved by water. It includes sand, gravel, clay, and silt. The kinds of alluvium and their location depend largely upon the carrying capacity of the streams that deposited them. The Manzano soils formed in geologically recent alluvium. These soils have undergone change since the parent sediment was deposited; therefore, they have developed only a weakly expressed B horizon. The Datil soils formed in the same kind of material; however, they are very old and thus they have strongly expressed Bt and Bk horizons. The Nolam and Caliza soils formed in gravelly alluvium deposited by ancient, fast-flowing ephemeral streams.

Colluvium is an incoherent mass of material that has been moved downslope under the influence of gravity. Colluvial materials are deposited at the base of steep slopes by gravity, soil creep, and local wash. Laborcita and Ponciano soils formed in colluvium derived from tuff and mudstone, respectively. Both soils are on steep slopes, but they have different properties because of the different characteristics of the parent material.

Eolian material is wind-deposited sand or silt. This sediment may have been the surface on one soil, but it became the parent material of another soil upon erosion and redeposition. Windblown silt is known as loess. The Socorro and Akela soils formed mostly in loess that was deposited on old basaltic lava flows. The Royosa and Pintura soils formed in eolian sand deposits that are so recent that no horizon development has taken place. The Pirodel soils formed in the same kind of material, but they are slightly older and have accumulations of organic matter and calcium carbonate in the form of a weak Bk horizon.

Plant and Animal Life

Plant and animal life includes fungi, bacteria, earthworms, insects, rodents, vegetation, and mammals, including man. The type of plants in a particular area determines to a large extent the amount of organic matter that will eventually be in the soil. Also, the vegetation may regulate certain chemical reactions in the soil and determine the type of micro-organisms that are present. The Lapdun soils formed under short and mid grasses, and they have a relatively high content of organic matter. The Nickel soils formed under shrubs, and they do not have as much organic matter. The micro-organisms present in these soils are similar, but their numbers are different. The Loarc soils formed under coniferous trees with an understory of grass. The soils under trees tend to be less alkaline; therefore, the micro-organisms in these soils differ from those in soils that formed under grass. This, in turn, alters the chemical reactions in the soils so that bases are removed much more rapidly.

Insects, rodents, and larger mammals physically mix the soil, and in extreme cases they may completely alter or change the soil from one kind to another. Man alters soils or parent material by adding fertilizer, organic matter, amendments such as lime and gypsum, and excess water. Man and livestock also alter soils by mechanical and physical manipulation, which may accelerate the process of soil erosion.

Topography

The two basic parts of the topography of the survey are slope and aspect. The slope of an area regulates the amount of surface drainage and water infiltration when all other factors are the same. Otherwise, its effect depends on, or is interrelated with, the texture of the soil, the type and density of vegetation, and the climate. As the slope increases, the potential for erosion increases and soil formation processes decrease. The San Mateo soils, for example, are gullied in some areas where slope is 3 to 4 percent but are not gullied in areas where slope is 0 to 1 percent. As the slope decreases, soil formation processes generally increase because of the greater infiltration and percolation of water through the soil and the more rapid buildup of soil material through alluvial deposition. The Manzano soils are deep, but they are still relatively young because they continue to receive soil additions. Steep soils tend to be thin because soil material is eroded away at the rate of development or only somewhat slower. Examples of such steep soils are those of the Puertecito, Tanbark, and Winona series; however, less sloping soils such as those of the Claunch, Ildecarb, and Sedillo series are deep and well developed.

Aspect, or the direction that the slope faces, affects the amount of heat available for soil development and the amount of available moisture, although these properties are also dependent on other factors. If all other factors are constant, north-facing slopes are cooler and moister than are south-facing slopes. This is especially evident near the transitional zones of temperature and rainfall regimes.

Climate

Climate has a significant influence on the other soil-forming factors by controlling the chemical and physical processes associated with the formation of soil in a geographic area. Temperature and precipitation are the most prominent soil-forming factors of climate (*4*).

Moisture in the soil dissolves soluble material and is necessary for the growth of plants and organisms that contribute organic material to the soil. Moisture transports material from one part of the soil to another and affects soil formation by depositing or eroding material. Temperature acts as an important factor in the decomposition of organic material and in the chemical and physical processes (*5*).

Temperature and moisture determine the degree of the weathering of parent material by regulating the chemical and biological processes involved in soil formation. Plant life and biochemical processes are governed by the presence or absence of adequate temperature and moisture (*4*). Relief is affected by climate through the processes of freezing, thawing, wetting, and drying, which influence the processes of erosion and deposition. Climate influences the time needed for the development of soil horizons. Soils with climates that have favorable temperature and moisture regimes will form horizons in significantly less time that those that have unfavorable climates.

Soils in the survey area that have relatively small amounts of precipitation and high temperatures are characterized by accumulations of secondary carbonates or gypsum and by low organic matter content. These soils typically occur in the Jornada del Muerto basin and are on or adjacent to the Rio Grande flood plain. Examples of these soils are those of the Campana, Gila, and Nickel series. An increase in elevation brings about a reduction in temperature and an increase in moisture. These minute changes in climate enhance the soil-forming factors by stimulating the growth of vegetation, the weathering of parent material, and the biological activity in the soil. Typically, these soils are on bajadas and knolls between the river valley and the mountains. Examples of these soils are those of the Harvey and Millett series. A further increase in elevation results in soils that have advanced soil development. Examples of these soils are those of the Abrazo, Cuate, and Thunderbird series. They are in the mountains or on Chupadera Mesa.

Time

The length of time that climate and plants and animals act on a given parent material in an area of specific topography determines the degree of development.

The Anthony, Arizo, Glendale, and San Mateo soils are young. The only clear horizon development is a surface horizon. The Calabasas, Caliza, La Fonda, and Pajarito soils have existed only long enough to allow some movement of clay and carbonates and to develop a weakly expressed B horizon or a calcic horizon.

The Dean, Goldust, Lapdun, Magdalena, Majada, and Turney soils have very strongly developed horizons. These soils have developed a thick, well expressed argillic horizon, calcic horizon, or surface horizon that is high in content of organic matter or have developed all three horizons. They are old soils that formed under climatic conditions that were cooler and moister, or both, than exists in the survey area today (*3, 8, 9*).

Some soils develop horizons more rapidly than others because of the nature of their parent material. A soil that is high in content of carbonates is slower in developing an argillic horizon. Coarse textured soils with a high content of rock fragments form a calcic horizon faster than fine textured soils or soils that do not have rock fragments (*6, 7*).

References

(1) American Association of State Highway Officials. 1982. Standard specifications for highway materials and methods of sampling and testing. Ed. 13, 2 vol., illus.

(2) American Society for Testing and Materials. 1974. Method for classification of soils for engineering purposes. ASTM Stand. D 2487-69. *In* 1974 Annual Book of ASTM Standards, Part 19, 464 pp., illus.

(3) Bachman, G.O. and M.N. Machette. 1977. Calcic soils and calcretes in the Southwestern United States. U.S. Geol. Surv. Open-file Rep. 77-794, 163 pp.

(4) Brady, Nyle C. 1974. The nature and properties of soils. Macmillan Publ. Co., Inc., NY. 639 pp., illus.

(5) Buol, S., F. Hole, and R. McCraken. 1973. Soil genesis and classification. Iowa State Univ. Press, Ames, IA. 360 pp., illus.

(6) Gile, Leland H. 1975. Causes of soil boundaries in an arid region: I. Age and parent materials. Soil Sci. Soc. Amer. Proc. 39:316-323.

(7) Gile, L.H. and R.B. Grossman. 1979. The desert project soil monograph. U.S. Dep. of Agric., Soil Conserv. Serv., 984 pp., illus., maps.

(8) Hawley, John W. 1978. Guidebook to Rio Grande Rift in New Mexico and Colorado. New Mexico Bur. of Mines and Miner. Resour. Cir. 163, 241 pp., 2 maps.

(9) Maker, H.J., J.M. Down, and J.U. Anderson. 1972. Soil associations and land classification for irrigation, Socorro County. Agric. Exp. Stn. Res. Rep. 234, 72 pp., illus.

(10) New Mexico Geological Society. 1983. Socorro Region II, guidebook to the 34th annual field conference. 344 pp., illus.

(11) New Mexico Geological Society. 1982. Geologic highway map of New Mexico.

(12) Portland Cement Association. 1973. PCA soil primer. 39 pp., illus.

(13) United States Department of Agriculture. 1951. Soil survey manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus.

(14) United States Department of Agriculture. 1961. Land capability classification. U.S. Dep. Agric. Handb. 210, 21 pp.

(15) United States Department of Agriculture. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Serv., U.S. Dep. Agric. Handb. 436, 754 pp., illus.

Glossary

Alkali (sodic) 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.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Arroyo. The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in alluvium.

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. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3.5
Low	3.5 to 5.0
Moderate	5.0 to 7.5
High	7.5 to 10
Very high	More than 10

Back slope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Back slopes in profile are commonly steep, are linear, and may or may not include cliff segments.

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.

Bajada. A broad alluvial slope extending from the base of a mountain range out into a basin and formed by coalescence of separate alluvial fans.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to flooding.

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 erosion. Brush management may improve the habitat for some species of wildlife.

Butte. An isolated small mountain or hill with steep or precipitous sides and a top variously flat, rounded, or pointed that may be a residual mass isolated by erosion or an exposed volcanic neck.

Caliche. A more or less cemented deposit of calcium carbonate in soils of warm-temperate, subhumid to arid areas. Caliche occurs as soft, thin layers in the soil or as hard, thick beds just beneath the solum, or it is exposed at the surface by erosion.

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a channer.

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 (7.5 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.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

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.

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.—Readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—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.

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.

Cuesta. An asymmetric, homoclinal ridge capped by resistant rock layers of slight to moderate dip.

Depth to rock (in tables). 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 upward movement of fragments from underlying sediment or remains after finer particles have been removed by running water or wind.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming with the dip of underlying bedded rock.

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, generally more open and with broader bottom land than a ravine or gulch.

Dune land. Land consisting of sand in ridges and intervening troughs that shifts with the wind.

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.

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.

Escarpment. 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 (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine textured soil. Sandy clay, silty clay, and clay.

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material is 35 to 60 percent flagstones, and extremely flaggy soil material is more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

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.

Gilgai. Commonly a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of Vertisols—clayey soils having a high coefficient of expansion and contraction with changes in moisture content.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gullied land. Land consisting of areas where erosion has cut a network of V-shaped or U-shaped channels. The areas resemble miniature badlands.

Gypsum land. Land consisting of exposures of nearly pure soft gypsum. The surface generally is very unstable and erodes easily. Trafficability is very poor.

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.

Hogback. A sharp-crested, symmetrical (homoclinal) ridge formed by highly tilted, resistant rock layers; produced by differential erosion of interlayered resistant and weak rocks and have dips of more than about 25 degrees (45 percent).

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 upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual.* The major horizons of mineral soil 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 A horizon. The B horizon is in part a layer of transition from the overlying A 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) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a 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 soil material. 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.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but it 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 potential. 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 bedrock or other 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.

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.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Large stones (in tables). Rock fragments 3 inches (7.5 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesa. A broad, nearly flat topped and commonly isolated upland mass characterized by summit widths that are more than the heights of bounding erosional scarps.

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.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

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.

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color in hue of 10YR, value of 6, and chroma of 4.

Observed rooting depth. Depth to which roots have been observed to penetrate.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Percs slowly (in tables). The slow movement of water through the soil, adversely affecting the specified use.

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 inches
Very rapid	more than 20 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.)

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 adjacent lowlands and separated from them on one or more sides by escarpments.

Ponding. Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability or an impermeable layer near the surface, the soil may not adequately filter effluent from a waste disposal system.

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.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

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 forb and shrub communities.

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 degree of acidity or alkalinity is expressed as—

	pH
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

Red beds. Sedimentary strata mainly red in color and composed largely of sandstone and shale.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Ridge. A long, narrow elevation of the land surface. It commonly is sharp-crested, has steep sides, and forms an extended upland between valleys. The term is used in areas of both hill and mountain relief (less than and more than 300 meters, respectively).

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Rubble land. Land consisting of areas of stones and boulders. Rubble land commonly is at the base of mountains, but some areas are deposits of cobbles, stones, and boulders left on mountainsides by glaciation or by periglacial processes.

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.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

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.

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

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.

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 underlying material. 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 (hillslope). The geomorphic component that forms the uppermost inclined surface at the top of a hillslope. It comprises the transition zone from the back slope to the summit of an upland. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

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.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil is generally silty or clayey, is slippery when wet, and is low in productivity.

Slope (in tables). Slope is great enough that special practices are required to insure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
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 underlying material. The living roots and plant and animal activities are largely 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.

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 grained* (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.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

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 (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

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."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

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.

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.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1900-82 at Socorro, NM]

Month	Temperature: Average daily maximum	Temperature: Average daily minimum	Precipitation: Average monthly total	Precipitation: Average number of days with 0.10 inch or more precipitation
	°F	°F	In	
January----	52	23	0.33	1
February---	59	27	0.34	1
March------	66	33	0.34	1
April------	75	41	0.38	1
May--------	84	48	0.42	1
June-------	93	51	0.54	2
July-------	93	63	1.36	3
August-----	92	61	1.47	4
September--	86	53	1.03	3
October----	75	41	0.85	2
November---	62	29	0.23	1
December---	52	23	0.61	1
Year------	74	41	7.90	21

TABLE 2.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
11	Armijo clay, 0 to 1 percent slopes	3,407	0.1
14	Saneli clay, 0 to 1 percent slopes	3,866	0.1
22	Glendale clay loam, 0 to 1 percent slopes	3,899	0.1
26	Popotosa clay loam, 0 to 1 percent slopes	2,355	0.1
32	Gila clay loam, 0 to 1 percent slopes	3,525	0.1
37	Agua clay loam, 0 to 1 percent slopes	1,353	*
44	Anthony sandy loam, 0 to 1 percent slopes	2,297	0.1
48	Anthony Variant sandy clay loam, 0 to 1 percent slopes	1,276	*
50	Brazito fine sandy loam, 0 to 1 percent slopes	1,894	0.1
52	Saneli clay, thin surface, 0 to 1 percent slopes	1,644	0.1
60	Typic Ustifluvents, 0 to 2 percent slopes	23,956	0.8
111	Armijo-Urban land complex, 0 to 1 percent slopes	402	*
114	Saneli-Urban land complex, 0 to 1 percent slopes	305	*
116	Caliza Variant-Urban land complex, 1 to 5 percent slopes	1,298	*
118	Arizo very stony loamy sand, 1 to 3 percent slopes	845	*
120	Adelino Variant-Caliza very stony sandy loams, 15 to 50 percent slopes	1,209	*
122	Glendale sandy loam, 0 to 1 percent slopes	325	*
124	Caliza very gravelly sandy loam, 1 to 7 percent slopes	882	*
128	Turney Variant gravelly sandy loam, 1 to 7 percent slopes	1,454	*
132	Gila fine sandy loam, 0 to 1 percent slopes	411	*
211	Armijo clay, occasionally flooded, 0 to 1 percent slopes	1,214	*
214	Saneli clay, occasionally flooded, 0 to 1 percent slopes	1,002	*
222	Glendale clay loam, occasionally flooded, 0 to 1 percent slopes	2,136	0.1
226	Popotosa clay loam, occasionally flooded, 0 to 1 percent slopes	391	*
232	Gila clay loam, occasionally flooded, 0 to 1 percent slopes	1,015	*
244	Anthony sandy loam, occasionally flooded, 0 to 1 percent slopes	565	*
250	Brazito fine sandy loam, occasionally flooded, 0 to 1 percent slopes	612	*
401	Motoqua-Rock outcrop complex, 10 to 45 percent slopes	28,697	0.9
403	Puertecito-Rock outcrop complex, 5 to 55 percent slopes	69,627	2.2
404	Motoqua, cool-Rock outcrop complex, 15 to 50 percent slopes	37,366	1.2
405	Thunderbird gravelly loam, 1 to 10 percent slopes	1,650	0.1
410	Clovis-Penistaja association, 1 to 10 percent slopes	43,678	1.4
418	Rizozo-Alicia-Rock outcrop association, 1 to 30 percent slopes	9,509	0.3
419	Navajo-Alicia association, 0 to 4 percent slopes	30,998	1.0
421	Glenberg-Riverwash association, 0 to 5 percent slopes	15,704	0.5
424	Manzano silt loam, 1 to 3 percent slopes	14,308	0.5
425	Sparank silty clay loam, 0 to 2 percent slopes	15,615	0.5
431	Harvey-Winona association, 2 to 10 percent slopes	10,299	0.3
432	Harvey-Winona-Tanbark association, 1 to 45 percent slopes	9,277	0.3
434	Rizozo-Rock outcrop complex, 1 to 30 percent slopes	11,393	0.4
445	Millett-Sedillo complex, 1 to 15 percent slopes	115,713	3.7
446	Harvey-Dean complex, 1 to 7 percent slopes	37,178	1.2
449	Cascajo very gravelly sandy loam, 15 to 30 percent slopes	69,339	2.2
450	Royosa fine sand, 1 to 6 percent slopes	22,629	0.7
451	Magdalena gravelly loam, 3 to 12 percent slopes	10,358	0.3
452	Telescope-Royosa association, 1 to 3 percent slopes	29,686	0.9
455	Datil sandy loam, 3 to 15 percent slopes	37,918	1.2
459	Pinon fine sandy loam, 1 to 12 percent slopes	9,252	0.3
460	Lapdun-Datil association, 5 to 30 percent slopes	64,940	2.1
472	Abrazo-Motoqua, cool-Rock outcrop complex, 10 to 50 percent slopes	95,807	3.0
478	Royosa-Loarc association, 1 to 5 percent slopes	19,471	0.6
479	Augustine fine sandy loam, 1 to 6 percent slopes	40,913	1.3
482	Deama, dry-Rock outcrop complex, 10 to 55 percent slopes	22,140	0.7
484	Mion-San Mateo-Rock outcrop association, 1 to 10 percent slopes	14,445	0.5
491	Riverwash	7,284	0.2
510	Guy-Dioxice-Pena association, 1 to 8 percent slopes	52,025	1.6
530	Loarc loamy sand, 1 to 12 percent slopes	9,634	0.3
540	Goldust gravelly sandy loam, 2 to 8 percent slopes	5,236	0.2
549	Ladron very gravelly sandy loam, 1 to 15 percent slopes	29,014	0.9
555	Datil gravelly loam, 15 to 25 percent slopes	28,093	0.9
556	Loarc-Datil-Majada association, 2 to 12 percent slopes	17,219	0.5
570	La Fonda-Torriorthents, ustic-rock outcrop association, 1 to 15 percent slopes	8,874	0.3
575	Flaco stony loam, 1 to 8 percent slopes	4,655	0.1

See footnote at end of table.

TABLE 2.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
580	Landavaso sandy loam, 1 to 5 percent slopes	9,027	0.3
582	Tanbark-Winona complex, 15 to 45 percent slopes	7,603	0.2
585	Rock outcrop-Travessilla complex, 1 to 10 percent slopes	43,238	1.4
600	Elbutte-Courthouse Variant-Rock outcrop complex, 5 to 45 percent slopes	8,462	0.3
601	Oscura silty clay loam, 1 to 3 percent slopes	5,015	0.2
603	Wink-Dona Ana loamy sands, 1 to 3 percent slopes	5,528	0.2
604	Turney loamy sand, 1 to 5 percent slopes	41,571	1.3
605	Armijo clay, moderately saline, 0 to 1 percent slopes	3,507	0.1
606	Largo loam, 0 to 3 percent slopes	4,619	0.1
610	Belen clay, 0 to 1 percent slopes	2,651	0.1
615	Anthony-Gila complex, 0 to 2 percent slopes	8,749	0.3
620	Bluepoint loamy fine sand, 1 to 9 percent slopes	61,754	2.0
621	Arizo-Riverwash complex, 0 to 5 percent slopes	37,247	1.2
625	Berino sandy loam, 1 to 3 percent slopes	8,215	0.3
627	Berino-Dona Ana association, 1 to 5 percent slopes	51,868	1.6
634	Lozier-Rock outcrop complex, 10 to 35 percent slopes	41,156	1.3
635	Wink-Pajarito complex, 1 to 8 percent slopes	118,425	3.8
636	Campana-Yesum association, 1 to 6 percent slopes	36,585	1.2
638	Nickel Variant very gravelly sandy loam, 2 to 15 percent slopes	2,554	0.1
641	Turney loam, 1 to 5 percent slopes	57,343	1.8
645	Yesum, overblown-Yesum complex, 0 to 3 percent slopes	16,220	0.5
646	Yesum very fine sandy loam, 0 to 6 percent slopes	9,641	0.3
648	Armijo-Glendale-Bluepoint association, 0 to 3 percent slopes	12,761	0.4
649	Nickel-Caliza very gravelly sandy loams, 1 to 30 percent slopes	202,560	6.4
650	Typic Camborthids-Nolam association, 2 to 50 percent slopes	23,426	0.7
651	Barana loam, 0 to 2 percent slopes	18,167	0.6
653	Bucklebar sandy clay loam, 1 to 3 percent slopes	10,140	0.3
655	Nolam gravelly sandy loam, 1 to 7 percent slopes	81,213	2.6
656	Aftaden-Akela-Lava flows association, 1 to 15 percent slopes	26,083	0.8
657	Akela-Lava flows-Armendaris association, 0 to 30 percent slopes	59,113	1.9
660	Dune land	5,857	0.2
689	Laborcita-Pilabo-Lemitar complex, 5 to 45 percent slopes	39,327	1.2
690	Bluepoint-Caliza complex, 1 to 30 percent slopes	39,714	1.3
695	Deltajo very channery loam, 5 to 45 percent slopes	17,573	0.6
696	Lithic Torriorthents-Lozier-Rock outcrop association, 25 to 70 percent slopes	22,327	0.7
705	Socorro-Flaco complex, 2 to 15 percent slopes	5,184	0.2
709	Penistaja-Clovis fine sandy loams, 1 to 8 percent slopes	37,346	1.2
716	Creel-Musofare-Clovis complex, 1 to 15 percent slopes	28,745	0.9
717	Penistaja-Clovis fine sands, 1 to 7 percent slopes	14,652	0.5
718	Palma, thick surface-Penistaja-Palma complex, 1 to 5 percent slopes	6,783	0.2
724	Gabaldon silt loam, 0 to 2 percent slopes	6,762	0.2
735	Netoma-Claunch association, 2 to 10 percent slopes	31,631	1.0
736	Winona-Tanbark-La Fonda complex, 1 to 20 percent slopes	51,977	1.6
737	Harvey-La Fonda association, 1 to 9 percent slopes	68,531	2.2
738	Harvey-Dean association, 1 to 9 percent slopes	62,339	2.0
749	Ildecarb-Dean gravelly loams, 1 to 10 percent slopes	18,802	0.6
760	Sedillo-Clovis association, 1 to 6 percent slopes	13,565	0.4
765	Puertecito, moist-Rock outcrop complex, 15 to 60 percent slopes	15,179	0.5
783	Ponciano very bouldery clay loam, 15 to 60 percent slopes	18,178	0.6
785	Torriorthents, ustic-Rock outcrop complex, 10 to 60 percent slopes	56,238	1.8
786	Rock outcrop-Badland complex, 25 to 100 percent slopes	29,331	0.9
788	Penistaja, eroded-Palma, thick surface association, 1 to 3 percent slopes	11,432	0.4
800	Haploborolls, aridic-Rock outcrop complex, 20 to 60 percent slopes	2,753	0.1
801	Calabasas association, 0 to 4 percent slopes	56	*
805	Tanbark-Rayohill complex, 1 to 5 percent slopes	13,350	0.4
812	Socorro very gravelly loam, 1 to 8 percent slopes	7,640	0.2
814	Puice-Tanbark-Harvey association, 1 to 25 percent slopes	55,051	1.7
816	Pirodel-Harvey-Pinon complex, 1 to 15 percent slopes	39,711	1.3
818	Mespun fine sand, 1 to 6 percent slopes	6,219	0.2
822	Pirodel fine sand, 1 to 7 percent slopes	29,936	0.9
824	Pinon very channery fine sandy loam, 1 to 30 percent slopes	7,852	0.2
826	Harvey-Ildecarb-Pinon complex, 2 to 10 percent slopes	16,785	0.5
828	Cuate-Tanbark complex, 2 to 15 percent slopes	27,252	0.9

See footnote at end of table.

TABLE 2.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
830	Cuate-Deama-Tanbark complex, 15 to 60 percent slopes	43,505	1.4
832	Jornaham cobbly fine sandy loam, 2 to 10 percent slopes	13,914	0.4
834	San Mateo-Glenberg complex, 0 to 2 percent slopes	9,878	0.3
836	Rayohill-Clovis fine sandy loams, 1 to 6 percent slopes	9,075	0.3
838	Tanbark-Rock outcrop complex, 35 to 80 percent slopes	24,296	0.8
840	Deama-Rock outcrop complex, 3 to 40 percent slopes	60,008	1.9
845	Winona-Rock outcrop complex, 5 to 45 percent slopes	27,083	0.9
850	Creel-Ponciano association, 2 to 45 percent slopes	11,559	0.4
	Water	6,996	0.2
	Total	3,154,820	100.0

* Less than 0.1 percent.

TABLE 3.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE ON IRRIGATED SOILS

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Land capability	Alfalfa hay	Peppers, fresh chili	Corn silage	Corn	Pasture
		Tons	Tons	Tons	Bu	AUM*
11 Armijo	IVs	5.0	4.5	24.0	3.0	11.0
14 Saneli	IIIs	5.0	4.5	26.0	3.0	11.0
22 Glendale	IIs	7.5	6.0	32.0	5.0	17.0
26 Popotosa	IIs	6.5	5.5	30.0	3.8	13.5
32 Gila	IIs	8.0	6.0	32.0	5.0	17.0
37 Agua	IIs	6.0	5.0	30.0	4.0	13.5
44 Anthony	IIIe	6.5	5.5	30.0	4.0	13.5
48 Anthony Variant	IVw	6.5	5.5	28.0	3.8	13.5
50 Brazito	IVs	5.0	4.0	30.0	3.5	9.0
52 Saneli	IIIs	4.5	4.5	26.0	2.8	11.0
132 Gila	IIIe	8.0	6.0	32.0	4.5	17.0
211 Armijo	IVs	5.0	4.5	24.0	3.0	11.0
214 Saneli	IIIs	5.0	4.5	26.0	3.0	11.0
222 Glendale	IIw	7.5	6.0	32.0	5.0	17.0
226 Popotosa	IIIw	6.5	5.5	30.0	3.8	13.5
232 Gila	IIw	8.0	6.0	32.0	5.0	17.0
244 Anthony	IIIe	6.5	5.5	30.0	4.0	13.5
250 Brazito	IVs	5.0	4.0	30.0	3.5	9.0

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 4.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS ON IRRIGATED SOILS

[The symbol < means less than; > means more than. Absence of an entry indicates that trees generally do not grow to the given height on that soil]

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
11----------------- Armijo	Tatarian honeysuckle.	Lilac, Siberian peashrub.	---	Russian-olive, plains cottonwood, golden willow.	Siberian elm.
14----------------- Saneli	Fourwing saltbush, lilac.	American plum, skunkbush sumac, eastern redcedar, Rocky Mountain juniper, Austrian pine, Russian-olive, green ash.	Arizona cypress, Siberian elm, Russian mulberry.	---	---
22----------------- Glendale	---	Pinyon, oriental arborvitae, fourwing saltbush, lilac.	Eastern redcedar, Rocky Mountain juniper, green ash, honeylocust.	Arizona cypress, Russian-olive, Siberian elm.	---
26----------------- Popotosa	Amur honeysuckle, fourwing saltbush.	Pinyon, skunkbush sumac, lilac.	Eastern redcedar, Rocky Mountain juniper, honeylocust, green ash.	Arizona cypress, Russian-olive.	Siberian elm.
32----------------- Gila	Amur honeysuckle, fourwing saltbush.	Pinyon, skunkbush sumac, lilac.	Eastern redcedar, Rocky Mountain juniper, honeylocust, green ash.	Arizona cypress, Russian-olive.	Siberian elm.
37----------------- Agua	---	Pinyon, lilac, oriental arborvitae, fourwing saltbush.	Eastern redcedar, Rocky Mountain juniper, green ash, honeylocust.	Arizona cypress, Russian-olive, Siberian elm.	---
44----------------- Anthony	Western sandcherry, fourwing saltbush, lilac.	Pinyon, ponderosa pine, Rocky Mountain juniper, eastern redcedar, Siberian elm, osageorange.	Afghanistan pine, Russian-olive, honeylocust.	---	---
48----------------- Anthony Variant	Tatarian honeysuckle.	Lilac, Siberian peashrub.	---	Russian-olive, plains cottonwood, golden willow.	Siberian elm.
50----------------- Brazito	Western sandcherry, fourwing saltbush, lilac.	Pinyon, ponderosa pine, Rocky Mountain juniper, eastern redcedar, Siberian elm, osageorange, Nanking cherry.	Russian-olive, honeylocust, Afghanistan pine.	---	---

See footnote at end of table.

TABLE 4.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS ON IRRIGATED SOILS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
52----------------- Saneli	Fourwing saltbush, lilac.	Eastern redcedar, Rocky Mountain juniper, Austrian pine, Russian-olive, green ash, skunkbush sumac, American plum.	Arizona cypress, Siberian elm, Russian mulberry.	---	---
111*: Armijo-----------	Fourwing saltbush, lilac.	Eastern redcedar, Rocky Mountain juniper, Austrian pine, Russian-olive, green ash, skunkbush sumac, American plum.	Arizona cypress, Siberian elm, Russian mulberry.	---	---
Urban land.					
114*: Saneli-----------	Fourwing saltbush, lilac.	Eastern redcedar, Rocky Mountain juniper, Austrian pine, Russian-olive, green ash, skunkbush sumac, American plum.	Arizona cypress, Siberian elm, Russian mulberry.	---	---
Urban land.					
116*: Caliza Variant---	Fourwing saltbush, lilac, skunkbush sumac.	Pinyon, eastern redcedar, Rocky Mountain juniper, ponderosa pine, Siberian elm, green ash, hackberry.	Russian-olive, honeylocust.	---	---
Urban land.					
118*-------------- Arizo	Western sandcherry, fourwing saltbush, lilac.	Pinyon, ponderosa pine, Rocky Mountain juniper, eastern redcedar, Siberian elm, osageorange, Nanking cherry.	Afghanistan pine, Russian-olive, honeylocust.	---	---
120*: Adelino Variant--	Fourwing saltbush	Pinyon, oriental arborvitae, lilac, American plum.	Eastern redcedar, Rocky Mountain juniper, green ash, honeylocust.	Arizona cypress, Russian-olive, Siberian elm.	---
Caliza-----------	Fourwing saltbush, lilac, skunkbush sumac.	Pinyon, eastern redcedar, Rocky Mountain juniper, ponderosa pine, Siberian elm, green ash, hackberry.	Russian-olive, honeylocust.	---	---

See footnote at end of table.

TABLE 4.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS ON IRRIGATED SOILS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
122------ Glendale	Fourwing saltbush.	Pinyon, oriental arborvitae, lilac, American plum.	Eastern redcedar, Rocky Mountain juniper, green ash, honeylocust.	Arizona cypress, Russian-olive, Siberian elm.	---
124------ Caliza	Fourwing saltbush, lilac, skunkbush sumac.	Pinyon, eastern redcedar, Rocky Mountain juniper, ponderosa pine, Siberian elm, green ash, hackberry.	Russian-olive, honeylocust.	---	---
132------ Gila	Amur honeysuckle, fourwing saltbush.	Pinyon, skunkbush sumac, lilac.	Eastern redcedar, Rocky Mountain juniper, honeylocust, green ash.	Arizona cypress, Russian-olive.	Siberian elm.
211------ Armijo	Tatarian honeysuckle.	Lilac, Siberian peashrub.	---	Russian-olive, plains cottonwood, golden willow.	Siberian elm.
214------ Saneli	Tatarian honeysuckle.	Lilac, Siberian peashrub.	---	Russian-olive, plains cottonwood, golden willow.	Siberian elm.
222------ Glendale	---	Pinyon, oriental arborvitae, American plum, lilac, fourwing saltbush.	Eastern redcedar, Rocky Mountain juniper, green ash, honeylocust.	Arizona cypress, Siberian elm, Russian-olive.	---
226------ Popotosa	Fourwing saltbush, Amur honeysuckle.	Pinyon, lilac, skunkbush sumac.	Eastern redcedar, Rocky Mountain juniper, honeylocust, green ash.	Arizona cypress, Russian-olive.	Siberian elm.
232------ Gila	---	Skunkbush sumac, lilac, fourwing saltbush.	Blue spruce, eastern redcedar, Rocky Mountain juniper.	Russian-olive, green ash, honeylocust, Russian mulberry.	Siberian elm, Lombardy poplar.
244------ Anthony	Tatarian honeysuckle.	Lilac, Siberian peashrub.	---	Russian-olive, plains cottonwood, golden willow.	Siberian elm.
250------ Brazito	Western sandcherry, fourwing saltbush, lilac.	Eastern redcedar, pinyon, ponderosa pine, Rocky Mountain juniper, osageorange, Siberian elm, Nanking cherry.	Russian-olive, honeylocust, Afghanistan pine.	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 5.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
11 Armijo	Severe: excess salt.	Severe: excess salt.	Severe: excess salt.	Moderate: too clayey.	Severe: excess salt, too clayey.
14 Saneli	Moderate: percs slowly, too clayey.	Moderate: too clayey, excess salt, percs slowly.	Moderate: too clayey, percs slowly, excess salt.	Moderate: too clayey.	Severe: too clayey.
22 Glendale	Moderate: excess salt.	Moderate: excess salt.	Moderate: small stones, excess salt.	Slight	Moderate: excess salt.
26 Popotosa	Moderate: excess salt.	Moderate: excess salt.	Moderate: excess salt.	Slight	Moderate: excess salt.
32 Gila	Moderate: excess salt.	Moderate: excess salt.	Moderate: excess salt.	Slight	Moderate: excess salt.
37 Agua	Moderate: excess salt.	Moderate: excess salt.	Moderate: small stones, excess salt.	Slight	Moderate: excess salt.
44 Anthony	Moderate: excess salt.	Moderate: excess salt.	Moderate: small stones, excess salt.	Slight	Moderate: excess salt.
48 Anthony Variant	Severe: wetness, excess salt.	Severe: wetness, excess salt.	Severe: wetness, excess salt.	Severe: wetness.	Severe: excess salt, wetness.
50 Brazito	Moderate: excess salt.	Moderate: excess salt.	Moderate: excess salt.	Slight	Moderate: excess salt, droughty.
52 Saneli	Moderate: percs slowly, too clayey.	Moderate: too clayey, excess salt, percs slowly.	Moderate: too clayey, percs slowly, excess salt.	Moderate: too clayey.	Severe: too clayey.
60. Typic Ustifluvents					
111*:					
Armijo	Severe: flooding, excess salt.	Severe: excess salt.	Severe: excess salt.	Slight	Severe: excess salt, too clayey.
Urban land.					
114*:					
Saneli	Severe: flooding.	Moderate: too clayey, excess salt, percs slowly.	Moderate: too clayey, percs slowly, excess salt.	Moderate: too clayey.	Severe: too clayey.
Urban land.					

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
116*:					
Caliza Variant	Severe: flooding.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, droughty.
Urban land.					
118* Arizo	Severe: flooding, small stones.	Severe: small stones.	Severe: large stones, small stones.	Moderate: large stones.	Severe: small stones, large stones, droughty.
120*:					
Adelino Variant	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.
Caliza	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, droughty.
122 Glendale	Moderate: excess salt.	Moderate: excess salt.	Moderate: small stones, excess salt.	Slight	Moderate: excess salt.
124 Caliza	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones, droughty.
128 Turney Variant	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones.
132 Gila	Moderate: excess salt.	Moderate: excess salt.	Moderate: excess salt.	Slight	Moderate: excess salt.
211 Armijo	Severe: flooding, excess salt.	Severe: excess salt.	Severe: excess salt.	Moderate: too clayey.	Severe: excess salt, too clayey.
214 Saneli	Severe: flooding.	Moderate: too clayey, excess salt.	Moderate: too clayey, flooding, percs slowly.	Moderate: too clayey.	Severe: too clayey.
222 Glendale	Severe: flooding.	Moderate: excess salt.	Moderate: small stones, flooding, excess salt.	Slight	Moderate: excess salt, flooding.
226 Popotosa	Severe: flooding.	Moderate: excess salt.	Moderate: flooding, excess salt.	Slight	Moderate: excess salt, flooding.
232 Gila	Severe: flooding.	Moderate: excess salt.	Moderate: flooding, excess salt.	Slight	Moderate: excess salt, flooding.

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
244 Anthony	Severe: flooding, excess salt.	Severe: excess salt.	Severe: excess salt.	Slight	Severe: excess salt.
250 Brazito	Severe: flooding.	Moderate: excess salt.	Moderate: flooding, excess salt.	Slight	Moderate: excess salt, droughty, flooding.
401*:					
Motoqua	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: large stones, slope.
Rock outcrop.					
403*:					
Puertecito	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: small stones, slope, thin layer.
Rock outcrop.					
404*:					
Motoqua	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: slope, thin layer.
Rock outcrop.					
405 Thunderbird	Moderate: small stones, percs slowly.	Moderate: small stones, percs slowly.	Severe: small stones.	Slight	Moderate: small stones, large stones.
410*:					
Clovis	Slight	Slight	Moderate: slope.	Slight	Slight.
Penistaja	Slight	Slight	Moderate: slope.	Slight	Slight.
418*:					
Rizozo	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight	Severe: depth to rock.
Alicia	Severe: flooding.	Moderate: dusty.	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
Rock outcrop.					
419*:					
Navajo	Severe: flooding, excess salt.	Severe: excess salt.	Severe: flooding, excess salt.	Severe: erodes easily.	Severe: excess salt, flooding.

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
419*:					
Alicia	Severe: flooding.	Moderate: dusty.	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
421*:					
Glenberg	Severe: flooding.	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty, flooding.
Riverwash.					
424 Manzano	Severe: flooding.	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
425 Sparank	Severe: flooding.	Moderate: percs slowly.	Moderate: percs slowly.	Severe: erodes easily.	Slight.
431*:					
Harvey	Slight	Slight	Severe: slope.	Slight	Slight.
Winona	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Moderate: large stones.	Severe: small stones.
432*:					
Harvey	Slight	Slight	Moderate: slope.	Slight	Slight.
Winona	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones.	Severe: small stones, large stones, slope.
Tanbark	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.
434*:					
Rizozo	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight	Severe: depth to rock.
Rock outcrop.					
445*:					
Millett	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, droughty, slope.
Sedillo	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Moderate: large stones.	Severe: small stones.
446*:					
Harvey	Slight	Slight	Moderate: slope.	Slight	Slight.

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
446*:					
Dean	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones.
449 Cascajo	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.	Severe: small stones, slope.
450 Royosa	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
451 Magdalena	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, small stones, percs slowly.	Slight	Moderate: small stones, large stones, droughty.
452*:					
Telescope	Slight	Slight	Slight	Slight	Slight.
Royosa	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
455 Datil	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
459 Pinon	Slight	Slight	Severe: slope.	Slight	Slight.
460*:					
Lapdun	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
Datil	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, slope.
472*:					
Abrazo	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Motoqua	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: small stones, slope.
Rock outcrop.					
478*:					
Royosa	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
Loarc	Slight	Slight	Moderate: slope.	Slight	Slight.
479 Augustine	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
482*:					
Deama	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: small stones, slope.
Rock outcrop.					
484*:					
Mion	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight	Severe: depth to rock.
San Mateo	Severe: flooding.	Slight	Moderate: slope.	Slight	Slight.
Rock outcrop.					
491*. Riverwash					
510*:					
Guy	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
Dioxice	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Severe: erodes easily.	Slight.
Pena	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.
530 Loarc	Slight	Slight	Severe: slope.	Slight	Slight.
540 Goldust	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones, droughty.
549 Ladron	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Slight	Severe: small stones.
555 Datil	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
556*:					
Loarc	Slight	Slight	Moderate: slope.	Slight	Slight.
Datil	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
556*:					
Majada	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Severe: erodes easily.	Moderate: large stones, droughty.
570*:					
La Fonda	Slight	Slight	Moderate: slope.	Slight	Slight.
Torriorthents.					
Rock outcrop.					
575 Flaco	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: dusty.	Moderate: small stones, large stones.
580 Landavaso	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.
582*:					
Tanbark	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.	Severe: slope, depth to rock.
Winona	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones.	Severe: small stones, large stones, slope.
585*:					
Rock outcrop.					
Travessilla	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.	Slight	Severe: depth to rock.
600*:					
Elbutte	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: slope, depth to rock.
Courthouse Variant	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: small stones, slope, thin layer.
Rock outcrop.					
601 Oscura	Severe: flooding.	Moderate: flooding, excess salt.	Severe: flooding.	Severe: erodes easily.	Severe: flooding.
603*:					
Wink	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
603*:					
Dona Ana	Slight	Slight	Moderate: slope.	Slight	Slight.
604 Turney	Slight	Slight	Moderate: slope.	Slight	Slight.
605 Armijo	Severe: flooding, excess sodium, excess salt.	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Slight	Severe: excess salt, excess sodium.
606 Largo	Severe: flooding.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.	Slight.
610 Belen	Severe: flooding, excess sodium, excess salt.	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Moderate: too clayey.	Severe: excess salt, excess sodium.
615*:					
Anthony	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
Gila	Severe: flooding.	Slight	Slight	Slight	Slight.
620 Bluepoint	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
621*:					
Arizo	Severe: flooding.	Slight	Severe: small stones.	Slight	Severe: droughty.
Riverwash.					
625 Berino	Slight	Slight	Moderate: slope.	Slight	Slight.
627*:					
Berino	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Slight.
Dona Ana	Slight	Slight	Moderate: slope.	Slight	Slight.
634*:					
Lozier	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, depth to rock.	Severe: small stones.	Severe: small stones, slope, depth to rock.
Rock outcrop.					
635*:					
Wink	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
Pajarito	Slight	Slight	Moderate: slope.	Slight	Slight.

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
636*:					
Campana	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
Yesum	Slight	Slight	Moderate: slope.	Slight	Slight.
638 Nickel Variant	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Severe: small stones.	Severe: small stones, droughty.
641 Turney	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.
645*:					
Yesum, overblown	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
Yesum	Slight	Slight	Slight	Slight	Slight.
646 Yesum	Slight	Slight	Moderate: slope.	Slight	Slight.
648*:					
Armijo	Severe: flooding, excess salt.	Severe: excess salt.	Severe: excess salt.	Severe: erodes easily.	Severe: excess salt.
Glendale	Severe: flooding, excess salt.	Severe: excess salt.	Severe: excess salt.	Slight	Severe: excess salt.
Bluepoint	Severe: flooding.	Slight	Moderate: slope.	Slight	Moderate: droughty.
649*:					
Nickel	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Severe: small stones.	Severe: small stones.
Caliza	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.	Severe: small stones, droughty, slope.
650*:					
Typic Camborthids.					
Nolam	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Slight	Severe: small stones, droughty.
651 Barana	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.	Slight.
653 Bucklebar	Slight	Slight	Moderate: slope.	Slight	Slight.

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
655 Nolam	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Severe: droughty.
656*:					
Aftaden	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Severe: depth to rock.
Akela	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.	Slight	Severe: thin layer.
Lava flows.					
657*:					
Akela	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: dusty.	Severe: small stones, thin layer.
Lava flows.					
Armendaris	Severe: flooding.	Moderate: percs slowly.	Moderate: percs slowly.	Severe: erodes easily.	Slight.
660*. Dune land.					
689*:					
Laborcita	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, slope.
Pilabo	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: large stones, slope.	Severe: large stones, slope.
Lemitar	Severe: large stones, small stones.	Severe: large stones, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones.	Severe: small stones, large stones.
690*:					
Bluepoint	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Moderate: slope.	Severe: small stones, slope.
Caliza	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.	Severe: small stones, droughty, slope.
695 Deltajo	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: small stones, slope.
696*: Lithic Torriorthents.					

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
696*:					
Lozier	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, depth to rock.	Severe: slope.	Severe: small stones, slope, depth to rock.
Rock outcrop.					
705*:					
Socorro	Severe: small stones.	Severe: small stones.	Severe: small stones.	Moderate: large stones.	Severe: small stones, large stones.
Flaco	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: thin layer.
709*:					
Penistaja	Slight	Slight	Moderate: slope.	Slight	Slight.
Clovis	Slight	Slight	Moderate: slope.	Slight	Slight.
716*:					
Creel	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: dusty.	Moderate: small stones, large stones.
Musofare	Moderate: slope, small stones, percs slowly.	Moderate: slope, small stones, percs slowly.	Severe: slope, small stones.	Slight	Moderate: small stones, large stones, slope.
Clovis	Slight	Slight	Severe: slope.	Slight	Slight.
717*:					
Penistaja	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Slight.
Clovis	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Slight.
718*:					
Palma, thick surface	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Slight.
Penistaja	Slight	Slight	Moderate: slope.	Slight	Slight.
Palma	Slight	Slight	Moderate: slope.	Slight	Slight.
724 Gabaldon	Severe: flooding.	Slight	Moderate: flooding.	Severe: erodes easily.	Moderate: flooding.
735*:					
Netoma	Moderate: dusty, excess salt.	Moderate: excess salt, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: excess salt.

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
735*:					
Claunch	Slight	Slight	Moderate: slope.	Slight	Slight.
736*:					
Winona	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Moderate: large stones, dusty.	Severe: small stones.
Tanbark	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight	Severe: depth to rock.
La Fonda	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.
737*:					
Harvey	Slight	Slight	Moderate: slope.	Slight	Slight.
La Fonda	Slight	Slight	Moderate: slope.	Slight	Slight.
738*:					
Harvey	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
Dean	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones.
749*:					
Ildecarb	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones, droughty.
Dean	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: dusty.	Moderate: small stones, large stones.
760*:					
Sedillo	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones.
Clovis	Slight	Slight	Moderate: slope.	Slight	Slight.
765*:					
Puertecito	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.
Rock outcrop.					

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
783 Ponciano	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: large stones, slope.
785*: Torriorthents.					
Rock outcrop.					
786*: Rock outcrop.					
Badland.					
788*: Penistaja	Slight	Slight	Moderate: slope.	Slight	Slight.
Palma	Slight	Slight	Moderate: slope.	Slight	Slight.
800*: Haploborolls.					
Rock outcrop.					
801*: Calabasas, 2 to 4 percent slopes	Slight	Slight	Moderate: slope.	Slight	Slight.
Calabasas, 0 to 2 percent slopes	Severe: flooding.	Slight	Slight	Slight	Slight.
805*: Tanbark	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: erodes easily.	Severe: depth to rock.
Rayohill	Severe: excess salt.	Severe: excess salt.	Severe: excess salt.	Severe: erodes easily.	Severe: excess salt.
812 Socorro	Severe: small stones.	Severe: small stones.	Severe: small stones.	Moderate: large stones, dusty.	Severe: small stones, large stones.
814*: Puice	Moderate: slope, small stones, dusty.	Moderate: slope, small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.	Moderate: small stones, large stones, droughty.
Tanbark	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.	Severe: depth to rock.
Harvey	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
816*:					
Pirodel	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope.
Harvey	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Pinon	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight	Severe: depth to rock.
818 Mespun	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
822 Pirodel	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
824 Pinon	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.	Severe: small stones, slope, depth to rock.
826*:					
Harvey	Slight	Slight	Severe: slope.	Slight	Slight.
Ildecarb	Moderate: small stones.	Moderate: small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, large stones, droughty.
Pinon	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight	Severe: depth to rock.
828*:					
Cuate	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Moderate: dusty.	Severe: small stones.
Tanbark	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.	Severe: depth to rock.
830*:					
Cuate	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: small stones, slope.
Deama	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: small stones, slope.
Tanbark	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: slope, depth to rock.

See footnote at end of table.

TABLE 5.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
832------------------- Jornaham	Moderate: large stones, small stones.	Moderate: large stones, small stones.	Severe: large stones, slope, small stones.	Slight----------	Moderate: small stones, large stones.
834*:					
San Mateo------------	Severe: flooding.	Moderate: flooding, dusty.	Severe: flooding.	Severe: erodes easily.	Severe: flooding.
Glenberg-------------	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
836*:					
Rayohill-------------	Severe: excess salt.	Severe: excess salt.	Severe: excess salt.	Slight----------	Severe: excess salt.
Clovis---------------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
838*:					
Tanbark--------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop.					
840*:					
Deama----------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: large stones, slope, small stones.	Moderate: large stones, slope.	Severe: large stones, slope, thin layer.
Rock outcrop.					
845*:					
Winona---------------	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.
Rock outcrop.					
850*:					
Creel----------------	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Severe: small stones.	Severe: small stones.
Ponciano-------------	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
11----------------- Armijo	Poor	Poor	Very poor.	---	---	Very poor.	Good	Good	Very poor.	---	Good	Very poor.
14----------------- Saneli	Fair	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Poor	Fair.
22----------------- Glendale	Good	Good	Poor	---	---	Poor	Good	Good	Fair	---	Good	---
26----------------- Popotosa	Good	Good	Poor	---	---	Poor	Poor	Good	Fair	---	Fair	Poor.
32----------------- Gila	Good	Good	Poor	---	---	Poor	Good	Good	Fair	---	Good	---
37----------------- Agua	Good	Good	Poor	---	---	Poor	Good	Good	Fair	---	Good	---
44----------------- Anthony	Good	Good	Poor	---	---	Poor	Good	Good	Fair	---	Good	---
48----------------- Anthony Variant	Poor	Fair	Very poor.	---	---	Very poor.	Good	Good	Poor	---	Good	---
50----------------- Brazito	Fair	Fair	Poor	---	---	Poor	Good	Good	Fair	---	Good	Poor.
52----------------- Saneli	Fair	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Poor	Fair.
60. Typic Ustifluvents												
111*: Armijo------------	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Very poor.	---	Very poor.	Poor.
Urban land.												
114*: Saneli------------	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Urban land.												
116*: Caliza Variant----	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Very poor.	---	Very poor.	Poor.
Urban land.												
118*--------------- Arizo	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.

See footnote at end of table.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
120*:												
Adelino Variant	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Very poor.	---	Very poor.	Poor.
Caliza	Very poor.	Very poor.	Poor	---	---	Poor	---	Very poor.	Very poor.	---	Very poor.	Poor.
122 Glendale	Good	Good	Poor	---	---	Poor	Good	Good	Fair	---	Good	Poor.
124 Caliza	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
128 Turney Variant	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Very poor.	---	Very poor.	Poor.
132 Gila	Good	Good	Poor	---	---	Poor	Good	Good	Fair	---	Good	Poor.
211 Armijo	Poor	Fair	Very poor.	---	---	Very poor.	Good	Good	Poor	---	Good	Very poor.
214 Saneli	Fair	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Poor	Fair.
222 Glendale	Good	Good	Poor	---	---	Poor	Good	Good	Fair	---	Good	Poor.
226 Popotosa	Good	Good	Poor	---	---	Poor	Good	Good	Fair	---	Good	Poor.
232 Gila	Good	Good	Poor	---	---	Poor	Good	Good	Fair	---	Good	Poor.
244 Anthony	Good	Good	Very poor.	---	---	Very poor.	Good	Good	Fair	---	Good	Very poor.
250 Brazito	Fair	Fair	Poor	---	---	Poor	Good	Good	Fair	---	Good	Poor.
401*:												
Motoqua	Very poor.	Poor	Fair	---	Poor	Poor	---	---	Poor	Poor	---	Fair.
Rock outcrop.												
403*:												
Puertecito	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Very poor.	---	Very poor.	Poor.
Rock outcrop.												
404*:												
Motoqua	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Rock outcrop.												
405 Thunderbird	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.

See footnote at end of table.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
410*:												
Clovis	Poor	Poor	Fair	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Fair.
Penistaja	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
418*:												
Rizozo	Very poor.	Very poor.	Poor	---	---	Fair	Very poor.	Very poor.	Very poor.	---	Very poor.	Fair.
Alicia	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Fair	---	Very poor.	Fair.
Rock outcrop.												
419*:												
Navajo	Very poor.	Very poor.	Very poor.	---	---	Very poor.	Poor	Very poor.	Very poor.	---	Very poor.	Very poor.
Alicia	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Fair	---	Very poor.	Fair.
421*:												
Glenberg	Poor	Fair	Fair	---	---	---	Very poor.	Very poor.	Fair	Poor	Very poor.	Fair.
Riverwash.												
424 Manzano	Good	Good	Fair	---	---	Fair	Good	Good	Good	---	Good	Fair.
425 Sparank	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
431*:												
Harvey	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Fair	---	Very poor.	Poor.
Winona	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
432*:												
Harvey	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Fair	---	Very poor.	Poor.
Winona	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
Tanbark	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
434*:												
Rizozo	Very poor.	Very poor.	Poor	---	---	Fair	Very poor.	Very poor.	Very poor.	---	Very poor.	Fair.
Rock outcrop.												

See footnote at end of table.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
445*:												
Millett	Poor	Poor	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
Sedillo	Poor	Poor	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
446*:												
Harvey	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Fair	---	Very poor.	Fair.
Dean	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
449 Cascajo	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
450 Royosa	Poor	Fair	Fair	---	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.	Fair.
451 Magdalena	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
452*:												
Telescope	Poor	Fair	Fair	---	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
Royosa	Poor	Fair	Fair	---	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.	Fair.
455 Datil	Poor	Fair	Fair	---	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
459 Pinon	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
460*:												
Lapdun	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
Datil	Poor	Fair	Fair	---	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
472*:												
Abrazo	Poor	Fair	Fair	---	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
Motoqua	Very poor.	Very poor.	Poor	---	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.												
478*:												
Royosa	Poor	Fair	Fair	---	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.	Fair.
Loarc	Poor	Fair	Fair	---	Good	Fair	Poor	Very poor.	Fair	Good	Very poor.	Fair.

See footnote at end of table.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
479 Augustine	Very poor.	Very poor.	Poor	---	---	Fair	Poor	Very poor.	Very poor.	---	Poor	Poor.
482*:												
Deama	Very poor.	Very poor.	Fair	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor.
Rock outcrop.												
484*:												
Mion	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
San Mateo	Poor	Poor	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Rock outcrop.												
491*. Riverwash												
510*:												
Guy	Poor	Fair	Fair	---	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
Dioxice	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
Pena	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
530 Loarc	Poor	Fair	Fair	---	Good	Fair	Poor	Very poor.	Fair	Good	Very poor.	Fair.
540 Goldust	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
549 Ladron	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
555 Datil	Poor	Fair	Fair	---	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
556*:												
Loarc	Poor	Fair	Fair	---	Good	Fair	Poor	Very poor.	Fair	Good	Very poor.	Fair.
Datil	Poor	Fair	Fair	---	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
Majada	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
570*:												
La Fonda	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Poor	---	Very pcor.	Fair.
Torriorthents.												
Rock outcrop.												

See footnote at end of table.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
575----------------- Flaco	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
580----------------- Landavaso	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
582*:												
Tanbark------------	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Winona-------------	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
585*:												
Rock outcrop.												
Travessilla--------	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Very poor.	---	Very poor.	Poor.
600*:												
Elbutte------------	Very poor.	Very poor.	Very poor.	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Very poor.
Courthouse Variant	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Very poor.	---	Very poor.	Poor.
Rock outcrop.												
601----------------- Oscura	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Poor	Poor	---	Poor	Fair.
603*:												
Wink---------------	Very poor.	Very poor.	Poor	---	Very poor.	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Dona Ana-----------	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Poor.
604----------------- Turney	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
605----------------- Armijo	Poor	Fair	Very poor.	---	---	Very poor.	Fair	Good	Poor	---	Fair	Very poor.
606----------------- Largo	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Very poor.	---	Very poor.	Poor.
610----------------- Belen	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Very poor.	---	Very poor.	Poor.
615*:												
Anthony------------	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Gila---------------	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
620----------------- Bluepoint	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.

See footnote at end of table.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
621*:												
Arizo	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Riverwash.												
625 Berino	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Poor.
627*:												
Berino	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Poor.
Dona Ana	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Poor.
634*:												
Lozier	Very poor.	Very poor.	Poor	---	Very poor.	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
Rock outcrop.												
635*:												
Wink	Very poor.	Very poor.	Poor	---	Very poor.	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Pajarito	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Poor.
636*:												
Campana	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Yesum	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
638 Nickel Variant	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Very poor.	---	Very poor.	Poor.
641 Turney	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
645*:												
Yesum, overblown	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
Yesum	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
646 Yesum	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
648*:												
Armijo	Very poor.	Very poor.	Very poor.	---	---	Very poor.	Poor	Very poor.	Very poor.	---	Very poor.	Very poor.
Glendale	Very poor.	Very poor.	Very poor.	---	---	Very poor.	Poor	Very poor.	Very poor.	---	Very poor.	Very poor.

See footnote at end of table.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
648*:												
Bluepoint----------	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
649*:												
Nickel-------------	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Caliza-------------	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
650*:												
Typic Camborthids.												
Nolam--------------	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
651----------------- Barana	Very poor.	Very poor.	Poor	---	---	Fair	Poor	Very poor.	Very poor.	---	Very poor.	Poor.
653----------------- Bucklebar	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
655----------------- Nolam	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
656*:												
Aftaden------------	Very poor.	Very poor.	Poor	---	---	Poor	---	---	Poor	---	---	Poor.
Akela--------------	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Very poor.	---	Very poor.	Fair.
Lava flows.												
657*:												
Akela--------------	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Very poor.	---	Very poor.	Fair.
Lava flows.												
Armendaris---------	Poor	Fair	Fair	---	---	Fair	Poor	Poor	Fair	---	Poor	Fair.
660*. Dune land												
689*:												
Laborcita----------	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Pilabo-------------	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
Lemitar------------	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
690*:												
Bluepoint----------	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.

See footnote at end of table.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
690*:												
Caliza	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
695 Deltajo	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
696*:												
Lithic Torriorthents.												
Lozier	Very poor.	Very poor.	Poor	---	Very poor.	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
Rock outcrop.												
705*:												
Socorro	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
Flaco	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
709*:												
Penistaja	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
Clovis	Poor	Poor	Fair	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Fair.
716*:												
Creel	Poor	Poor	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Musofare	Poor	Poor	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Clovis	Poor	Poor	Fair	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Fair.
717*:												
Penistaja	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
Clovis	Poor	Poor	Fair	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Fair.
718*:												
Palma, thick surface	Poor	Fair	Fair	---	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
Penistaja	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
Palma	Poor	Fair	Fair	---	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
724 Gabaldon	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.

See footnote at end of table.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
735*:												
Netoma	Very poor.	Very poor.	Very poor.	---	---	Very poor.	Very poor.	Very poor.	Very poor.	---	Very poor.	Very poor.
Claunch	Poor	Fair	Poor	---	---	Very poor.	Poor	Very poor.	Poor	---	Very poor.	Very poor.
736*:												
Winona	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
Tanbark	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
La Fonda	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Fair.
737*:												
Harvey	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Fair	---	Very poor.	Fair.
La Fonda	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Fair.
738*:												
Harvey	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Fair	---	Very poor.	Fair.
Dean	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
749*:												
Ildecarb	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
Dean	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
760*:												
Sedillo	Poor	Poor	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Clovis	Poor	Poor	Fair	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Fair.
765*:												
Puertecito	Very poor.	Very poor.	Poor	---	---	Poor	Poor	Very poor.	Very poor.	---	Very poor.	Poor.
Rock outcrop.												
783 Ponciano	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
785*:												
Torriorthents.												
Rock outcrop.												

See footnote at end of table.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
786*:												
Rock outcrop.												
Badland.												
788*:												
Penistaja	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
Palma	Poor	Fair	Fair	---	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
800*:												
Haploborolls.												
Rock outcrop.												
801*:												
Calabasas, 2 to 4 percent slopes	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Fair	---	Very poor.	Poor.
Calabasas, 0 to 4 percent slopes	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Fair	---	Very poor.	Poor.
805*:												
Tanbark	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Rayohill	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
812 Socorro	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
814*:												
Puice	Very poor.	Very poor.	Fair	---	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
Tanbark	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Harvey	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Fair	---	Very poor.	Fair.
816*:												
Pirodel	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
Harvey	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Fair	---	Very poor.	Fair.
Pinon	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
818 Mespun	Very poor.	Very poor.	Fair	---	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
822 Pirodel	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.

See footnote at end of table.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
824----------------- Pinon	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
826*:												
Harvey-------------	Poor	Fair	Fair	---	---	Poor	Poor	Very poor.	Fair	---	Very poor.	Poor.
Ildecarb-----------	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
Pinon--------------	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
828*:												
Cuate--------------	Poor	Poor	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Tanbark------------	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
830*:												
Cuate--------------	Poor	Poor	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Deama--------------	Very poor.	Very poor.	Fair	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor.
Tanbark------------	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
832----------------- Jornaham	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
834*:												
San Mateo----------	Poor	Poor	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Glenberg-----------	Poor	Fair	Fair	Good	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.	Fair.
836*:												
Rayohill-----------	Poor	Fair	Fair	---	---	Fair	Poor	Very poor.	Fair	---	Very poor.	Fair.
Clovis-------------	Poor	Poor	Fair	---	---	Poor	Poor	Very poor.	Poor	---	Very poor.	Fair.
838*:												
Tanbark------------	Very poor.	Very poor.	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Rock outcrop.												
840*:												
Deama--------------	Very poor.	Very poor.	Fair	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor.
Rock outcrop.												

See footnote at end of table.

TABLE 6.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
845*:												
Winona	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
Rock outcrop.												
850*:												
Creel	Poor	Poor	Fair	---	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Ponciano	Very poor.	Very poor.	Poor	---	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
11----------------- Armijo	Severe: cutbanks cave.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Severe: excess salt, too clayey.
14----------------- Saneli	Severe: cutbanks cave.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Severe: too clayey.
22----------------- Glendale	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: excess salt.
26----------------- Popotosa	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: wetness.	Moderate: shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: excess salt.
32----------------- Gila	Moderate: wetness.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: excess salt.
37----------------- Agua	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: excess salt.
44----------------- Anthony	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: excess salt.
48----------------- Anthony Variant	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: excess salt, wetness.
50----------------- Brazito	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: excess salt, droughty.
52----------------- Saneli	Severe: cutbanks cave.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Severe: too clayey.
60. Typic Ustifluvents						
111*:						
Armijo-----------	Severe: cutbanks cave.	Severe: flooding, shrink-swell.	Severe: flooding.	Severe: flooding, shrink-swell.	Severe: low strength, shrink-swell.	Severe: excess salt, too clayey.
Urban land.						
114*:						
Saneli-----------	Severe: cutbanks cave.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: low strength, shrink-swell.	Severe: too clayey.
Urban land.						

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
116*:						
Caliza Variant	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: small stones, droughty.
Urban land.						
118*: Arizo	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: small stones, large stones, droughty.
120*:						
Adelino Variant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, large stones, slope.
Caliza	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, large stones, droughty.
122: Glendale	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: excess salt.
124: Caliza	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: small stones, droughty.
128: Turney Variant	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: small stones, large stones.
132: Gila	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Moderate: excess salt.
211: Armijo	Severe: cutbanks cave.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: low strength, flooding, shrink-swell.	Severe: excess salt, too clayey.
214: Saneli	Severe: cutbanks cave.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: low strength, flooding, shrink-swell.	Severe: too clayey.
222: Glendale	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: excess salt, flooding.
226: Popotosa	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: excess salt, flooding.
232: Gila	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: excess salt, flooding.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
244 Anthony	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: excess salt.
250 Brazito	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: excess salt, droughty, flooding.
401*:						
Motoqua	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: large stones, slope.
Rock outcrop.						
403*:						
Puertecito	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, thin layer.
Rock outcrop.						
404*:						
Motoqua	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, thin layer.
Rock outcrop.						
405 Thunderbird	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Moderate: small stones, large stones.
410*:						
Clovis	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
Penistaja	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
418*:						
Rizozo	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Alicia	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
Rock outcrop.						
419*:						
Navajo	Moderate: too clayey, flooding.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: low strength, flooding, shrink-swell.	Severe: excess salt, flooding.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
419*:						
Alicia	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
421*:						
Glenberg	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
Riverwash.						
424 Manzano	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: low strength, flooding, frost action.	Slight.
425 Sparank	Moderate: too clayey.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: low strength, shrink-swell.	Slight.
431*:						
Harvey	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
Winona	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones.
432*:						
Harvey	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
Winona	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
Tanbark	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
434*:						
Rizozo	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rock outcrop.						
445*:						
Millett	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty, slope.
Sedillo	Moderate: large stones, slope.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, large stones.	Severe: small stones.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
446*:						
Harvey	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
Dean	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Moderate: small stones, large stones.
449 Cascajo	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
450 Royosa	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
451 Magdalena	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Moderate: small stones, large stones, droughty.
452*:						
Telescope	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Slight.
Royosa	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
455 Datil	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
459 Pinon	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
460*:						
Lapdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Datil	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, slope.
472*:						
Abrazo	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Motoqua	Severe: depth to rock, large stones, slope.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: small stones, slope.
Rock outcrop.						
478*:						
Royosa	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty, too sandy.
Loarc	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
479-------- Augustine	Slight--------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
482*:						
Deama--------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope.
Rock outcrop.						
484*:						
Mion--------	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Severe: depth to rock.
San Mateo--------	Slight--------	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, shrink-swell.	Slight.
Rock outcrop.						
491*. Riverwash.						
510*:						
Guy--------	Severe: cutbanks cave.	Slight--------	Slight--------	Slight--------	Slight--------	Slight.
Dioxice--------	Slight--------	Slight--------	Slight--------	Slight--------	Moderate: frost action.	Slight.
Pena--------	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: frost action, large stones.	Moderate: droughty.
530-------- Loarc	Severe: cutbanks cave.	Slight--------	Slight--------	Moderate: slope.	Slight--------	Slight.
540-------- Goldust	Moderate: too clayey, large stones.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Moderate: small stones, large stones, droughty.
549-------- Ladron	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: small stones.
555-------- Datil	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
556*:						
Loarc--------	Severe: cutbanks cave.	Slight--------	Slight--------	Moderate: slope.	Slight--------	Slight.
Datil--------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Majada--------	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: frost action, large stones.	Moderate: large stones, droughty.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
570*:						
La Fonda	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: low strength, shrink-swell.	Slight.
Torriorthents.						
Rock outcrop.						
575 Flaco	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: small stones, large stones.
580 Landavaso	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
582*:						
Tanbark	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Winona	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
585*:						
Rock outcrop.						
Travessilla	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
600*:						
Elbutte	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope, depth to rock.
Courthouse Variant	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, thin layer.
Rock outcrop.						
601 Oscura	Moderate: too clayey, flooding.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: low strength, flooding, shrink-swell.	Severe: flooding.
603*:						
Wink	Slight	Slight	Slight	Slight	Slight	Moderate: droughty.
Dona Ana	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
604 Turney	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
605--------------- Armijo	Severe: cutbanks cave.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: low strength, flooding, shrink-swell.	Severe: excess salt, excess sodium.
606--------------- Largo	Slight---------	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength.	Slight.
610--------------- Belen	Severe: cutbanks cave.	Severe: flooding, shrink-swell.	Severe: flooding.	Severe: flooding, shrink-swell.	Severe: low strength, flooding, shrink-swell.	Severe: excess salt, excess sodium.
615*:						
Anthony----------	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty.
Gila-------------	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Slight.
620--------------- Bluepoint	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
621*:						
Arizo------------	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: droughty.
Riverwash.						
625--------------- Berino	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
627*:						
Berino-----------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
Dona Ana---------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
634*:						
Lozier-----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
Rock outcrop.						
635*:						
Wink-------------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
Pajarito---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
636*:						
Campana----------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
Yesum------------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
638: Nickel Variant	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: small stones, droughty.
641: Turney	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
645*:						
Yesum, overblown	Slight	Slight	Slight	Slight	Slight	Moderate: droughty.
Yesum	Slight	Slight	Slight	Slight	Slight	Slight.
646: Yesum	Slight	Slight	Slight	Slight	Slight	Slight.
648*:						
Armijo	Severe: cutbanks cave.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: flooding, shrink-swell.	Severe: low strength, shrink-swell.	Severe: excess salt.
Glendale	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: low strength, flooding, shrink-swell.	Severe: excess salt.
Bluepoint	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty.
649*:						
Nickel	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: small stones.
Caliza	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty, slope.
650*:						
Typic Camborthids.						
Nolam	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: small stones, droughty.
651: Barana	Moderate: dense layer.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
653: Bucklebar	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
655: Nolam	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: droughty.
656*:						
Aftaden	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Akela	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
656*: Lava flows.						
657*: Akela	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, thin layer.
Lava flows.						
Armendaris	Moderate: too clayey.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength.	Slight.
660*. Dune land						
689*: Laborcita	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
Pilabo	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.
Lemitar	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: small stones, large stones.
690*: Bluepoint	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
Caliza	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty, slope.
695 Deltajo	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
696*: Lithic Torriorthents.						
Lozier	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
Rock outcrop.						
705*: Socorro	Severe: depth to rock, large stones.	Severe: large stones.	Severe: depth to rock, large stones.	Severe: large stones.	Severe: large stones.	Severe: small stones, large stones.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
705*:						
Flaco	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Moderate: thin layer.
709*:						
Penistaja	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
Clovis	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
716*:						
Creel	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight	Moderate: small stones, large stones.
Musofare	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, large stones, slope.
Clovis	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
717*:						
Penistaja	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
Clovis	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
718*:						
Palma, thick surface	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
Penistaja	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
Palma	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
724 Gabaldon	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
735*:						
Netoma	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: excess salt.
Claunch	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
736*:						
Winona	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: small stones.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
786*:						
Rock outcrop.						
Badland.						
788*:						
Penistaja	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
Palma	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
800*:						
Haploborolls.						
Rock outcrop.						
801*:						
Calabasas, 2 to 4 percent slopes	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: low strength.	Slight.
Calabasas, 0 to 2 percent slopes	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: low strength, flooding.	Slight.
805*:						
Tanbark	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rayohill	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock.	Moderate: depth to rock.	Severe: excess salt.
812 Socorro	Severe: depth to rock, large stones.	Severe: large stones.	Severe: depth to rock, large stones.	Severe: large stones.	Severe: large stones.	Severe: small stones, large stones.
814*:						
Puice	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Moderate: small stones, large stones, droughty.
Tanbark	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Harvey	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
816*:						
Pirodel	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Harvey	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: slope, shrink-swell.	Moderate: slope.
Pinon	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
818 Mespun	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
822 Pirodel	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
824 Pinon	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
826*:						
Harvey	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
Ildecarb	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: small stones, large stones, droughty.
Pinon	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
828*:						
Cuate	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Severe: small stones.
Tanbark	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
830*:						
Cuate	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
Deama	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope.
Tanbark	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
832 Jornaham	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: small stones, large stones.
834*:						
San Mateo	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Glenberg	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
836*:						
Rayohill	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock.	Moderate: depth to rock.	Severe: excess salt.

See footnote at end of table.

TABLE 7.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
836*:						
Clovis-----------	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Slight.
838*:						
Tanbark----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop.						
840*:						
Deama------------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: large stones, slope, thin layer.
Rock outcrop.						
845*:						
Winona-----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
Rock outcrop.						
850*:						
Creel------------	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Severe: small stones.
Ponciano---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: small stones, large stones, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
11----------------- Armijo	Severe: wetness, percs slowly.	Moderate: seepage, wetness.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
14----------------- Saneli	Severe: wetness, percs slowly, poor filter.	Severe: seepage.	Severe: wetness.	Moderate: wetness.	Poor: hard to pack.
22----------------- Glendale	Severe: wetness, percs slowly.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Good.
26----------------- Popotosa	Severe: wetness, percs slowly, poor filter.	Severe: seepage.	Severe: wetness, too sandy.	Moderate: wetness.	Poor: too sandy.
32----------------- Gila	Severe: wetness.	Moderate: seepage, wetness.	Severe: wetness.	Moderate: wetness.	Good.
37----------------- Agua	Severe: wetness, poor filter.	Severe: seepage.	Severe: wetness, too sandy.	Moderate: wetness.	Poor: too sandy.
44----------------- Anthony	Severe: wetness.	Severe: seepage.	Severe: wetness, too sandy.	Moderate: wetness.	Poor: too sandy.
48----------------- Anthony Variant	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
50----------------- Brazito	Severe: wetness, poor filter.	Severe: seepage.	Severe: wetness, too sandy.	Moderate: wetness.	Poor: seepage, too sandy.
52----------------- Saneli	Severe: wetness, percs slowly, poor filter.	Severe: seepage.	Severe: wetness.	Moderate: wetness.	Poor: hard to pack.
60. Typic Ustifluvents					
111*:					
Armijo-------------	Severe: percs slowly.	Slight-----------	Moderate: flooding, too clayey.	Moderate: flooding.	Poor: hard to pack.
Urban land.					

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
114*:					
Saneli	Severe: wetness, percs slowly, poor filter.	Severe: seepage, flooding.	Severe: wetness.	Moderate: flooding, wetness.	Poor: hard to pack.
Urban land.					
116*:					
Caliza Variant	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
Urban land.					
118* Arizo	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, too sandy, large stones.	Severe: flooding.	Poor: seepage, too sandy, small stones.
120*:					
Adelino Variant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Caliza	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: slope.	Poor: seepage, too sandy, small stones.
122 Glendale	Severe: wetness, percs slowly.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Good.
124 Caliza	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight	Poor: seepage, too sandy, small stones.
128 Turney Variant	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
132 Gila	Severe: wetness.	Moderate: seepage, wetness.	Severe: wetness.	Moderate: wetness.	Good.
211 Armijo	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding.	Poor: too clayey, hard to pack.
214 Saneli	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding.	Severe: flooding, wetness.	Severe: flooding.	Poor: hard to pack.
222 Glendale	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Good.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
226----------------- Popotosa	Severe: flooding, wetness, percs slowly.	Severe: seepage, flooding.	Severe: flooding, wetness, too sandy.	Severe: flooding.	Poor: too sandy.
232----------------- Gila	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Good.
244----------------- Anthony	Severe: flooding, wetness.	Severe: seepage, flooding.	Severe: flooding, wetness, too sandy.	Severe: flooding.	Poor: too sandy.
250----------------- Brazito	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding.	Severe: flooding, wetness, too sandy.	Severe: flooding.	Poor: seepage, too sandy.
401*:					
Motoqua------------	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, large stones, slope.
Rock outcrop.					
403*:					
Puertecito---------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop.					
404*:					
Motoqua------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop.					
405----------------- Thunderbird	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: area reclaim, too clayey, hard to pack.
410*:					
Clovis-------------	Moderate: percs slowly.	Severe: seepage.	Slight-----------	Slight-----------	Good.
Penistaja----------	Moderate: percs slowly.	Severe: seepage.	Slight-----------	Slight-----------	Good.
418*:					
Rizozo-------------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
418*:					
Alicia	Moderate: flooding, percs slowly.	Moderate: seepage, slope.	Moderate: flooding.	Moderate: flooding.	Good.
Rock outcrop.					
419*:					
Navajo	Severe: flooding, percs slowly.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Poor: hard to pack.
Alicia	Moderate: flooding, percs slowly.	Moderate: seepage, slope.	Moderate: flooding.	Moderate: flooding.	Good.
421*:					
Glenberg	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding.	Severe: flooding.	Fair: too sandy.
Riverwash.					
424 Manzano	Severe: wetness, percs slowly.	Severe: flooding.	Severe: wetness.	Moderate: flooding, wetness.	Fair: too clayey.
425 Sparank	Severe: percs slowly.	Severe: flooding.	Moderate: flooding.	Moderate: flooding.	Poor: hard to pack.
431*:					
Harvey	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Winona	Severe: depth to rock.	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock.	Poor: depth to rock, small stones.
432*:					
Harvey	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Winona	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Tanbark	Severe: depth to rock, slope, excess gypsum.	Severe: depth to rock, slope, excess gypsum.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
434*:					
Rizozo	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Rock outcrop.					

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
445*:					
Millett	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
Sedillo	Moderate: percs slowly, slope, large stones.	Severe: slope.	Severe: large stones.	Moderate: slope.	Poor: small stones.
446*:					
Harvey	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Dean	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Poor: small stones.
449 Cascajo	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: slope.	Poor: seepage, too sandy, small stones.
450 Royosa	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
451 Magdalena	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Slight	Poor: too clayey, small stones.
452*:					
Telescope	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: small stones.
Royosa	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
455 Datil	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
459 Pinon	Slight	Moderate: slope.	Slight	Slight	Poor: small stones.
460*:					
Lapdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Datil	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
472*:					
Abrazo	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, large stones.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
472*:					
Motoqua	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, large stones, slope.
Rock outcrop.					
478*:					
Royosa	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Loarc	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy, small stones.
479 Augustine	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, small stones.
482*:					
Deama	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
484*:					
Mion	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, hard to pack.
San Mateo	Moderate: flooding, percs slowly.	Moderate: seepage, slope.	Moderate: flooding.	Moderate: flooding.	Good.
Rock outcrop.					
491*. Riverwash					
510*:					
Guy	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
Dioxice	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Fair: small stones.
Pena	Moderate: percs slowly, large stones.	Moderate: seepage, slope, large stones.	Severe: large stones.	Slight	Poor: small stones.
530 Loarc	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy, small stones.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
540: Goldust	Severe: percs slowly.	Severe: large stones.	Moderate: too clayey, large stones.	Slight	Poor: small stones.
549: Ladron	Moderate: percs slowly, slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
555: Datil	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
556*:					
Loarc	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy, small stones.
Datil	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
Majada	Moderate: percs slowly, large stones.	Moderate: seepage, slope, large stones.	Severe: large stones.	Slight	Poor: small stones.
570*:					
La Fonda	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Torriorthents.					
Rock outcrop.					
575: Flaco	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
580: Landavaso	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
582*:					
Tanbark	Severe: depth to rock, slope, excess gypsum.	Severe: depth to rock, slope, excess gypsum.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Winona	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
585*:					
Rock outcrop.					
Travessilla	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
600*:					
Elbutte	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Courthouse Variant	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
Rock outcrop.					
601 Oscura	Severe: flooding, percs slowly.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Poor: hard to pack.
603*:					
Wink	Slight	Severe: seepage.	Slight	Slight	Good.
Dona Ana	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
604 Turney	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
605 Armijo	Severe: flooding, percs slowly.	Severe: flooding.	Severe: flooding, too clayey, excess sodium.	Severe: flooding.	Poor: too clayey, excess salt, excess sodium.
606 Largo	Severe: percs slowly.	Moderate: seepage.	Moderate: flooding.	Moderate: flooding.	Good.
610 Belen	Severe: flooding, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too sandy.	Severe: flooding.	Fair: too sandy.
615*:					
Anthony	Moderate: flooding.	Severe: seepage, flooding.	Severe: too sandy.	Moderate: flooding.	Fair: too sandy.
Gila	Moderate: flooding, percs slowly.	Severe: flooding.	Severe: too sandy.	Moderate: flooding.	Fair: too sandy.
620 Bluepoint	Severe: poor filter.	Severe: seepage.	Moderate: too sandy.	Slight	Fair: too sandy.
621*:					
Arizo	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, too sandy.	Severe: flooding.	Poor: seepage, too sandy, small stones.
Riverwash.					

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
625 Berino	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
627*:					
Berino	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Dona Ana	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
634*:					
Lozier	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Rock outcrop.					
635*:					
Wink	Slight	Severe: seepage.	Slight	Slight	Good.
Pajarito	Slight	Severe: seepage.	Slight	Slight	Good.
636*:					
Campana	Severe: excess gypsum.	Severe: excess gypsum.	Slight	Slight	Poor: thin layer.
Yesum	Severe: excess gypsum.	Severe: excess gypsum.	Slight	Slight	Poor: thin layer.
638 Nickel Variant	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
641 Turney	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
645*:					
Yesum, overblown	Severe: excess gypsum.	Severe: excess gypsum.	Slight	Slight	Poor: thin layer.
Yesum	Severe: excess gypsum.	Severe: excess gypsum.	Slight	Slight	Poor: thin layer.
646 Yesum	Severe: excess gypsum.	Severe: excess gypsum.	Slight	Slight	Poor: thin layer.
648*:					
Armijo	Severe: percs slowly.	Slight	Severe: too clayey, excess salt.	Moderate: flooding.	Poor: too clayey, excess salt.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
648*:					
Glendale	Severe: percs slowly.	Severe: flooding.	Severe: excess salt.	Moderate: flooding.	Good.
Bluepoint	Severe: poor filter.	Severe: seepage, flooding.	Moderate: flooding, too sandy.	Moderate: flooding.	Fair: too sandy.
649*:					
Nickel	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Poor: seepage, small stones.
Caliza	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: slope.	Poor: seepage, too sandy, small stones.
650*: Typic Camborthids.					
Nolam	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
651 Barana	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Good.
653 Bucklebar	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
655 Nolam	Slight	Severe: seepage.	Slight	Slight	Poor: small stones.
656*:					
Aftaden	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Akela	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
Lava flows.					
657*:					
Akela	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
Lava flows.					
Armendaris	Severe: percs slowly.	Severe: flooding.	Severe: too clayey.	Moderate: flooding.	Poor: too clayey.
660*. Dune land					

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
689*:					
Laborcita	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Pilabo	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: large stones, slope.
Lemitar	Severe: depth to rock.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock.	Poor: area reclaim, small stones.
690*:					
Bluepoint	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: slope.	Poor: too sandy, slope.
Caliza	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: slope.	Poor: seepage, too sandy, small stones.
695 Deltajo	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
696*:					
Lithic Torriorthents.					
Lozier	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Rock outcrop.					
705*:					
Socorro	Severe: depth to rock, large stones.	Severe: seepage, depth to rock.	Severe: depth to rock, large stones.	Severe: depth to rock.	Poor: depth to rock, small stones.
Flaco	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
709*:					
Penistaja	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.
Clovis	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.
716*:					
Creel	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
716*:					
Musofare	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
Clovis	Moderate: percs slowly.	Severe: seepage, slope.	Slight	Slight	Good.
717*:					
Penistaja	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.
Clovis	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.
718*:					
Palma, thick surface	Slight	Severe: seepage.	Moderate: too sandy.	Slight	Fair: too sandy.
Penistaja	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.
Palma	Slight	Severe: seepage.	Moderate: too sandy.	Slight	Fair: too sandy.
724 Gabaldon	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Fair: too clayey.
735*:					
Netoma	Severe: excess gypsum.	Severe: excess gypsum.	Slight	Slight	Poor: thin layer.
Claunch	Severe: excess gypsum.	Severe: excess gypsum, seepage.	Slight	Slight	Good.
736*:					
Winona	Severe: depth to rock.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock.	Poor: depth to rock, small stones.
Tanbark	Severe: depth to rock, excess gypsum.	Severe: depth to rock, slope, excess gypsum.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
La Fonda	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
737*:					
Harvey	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
La Fonda	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
738*:					
Harvey	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Dean	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Poor: small stones.
749*:					
Ildecarb	Severe: percs slowly, excess gypsum.	Severe: excess gypsum.	Moderate: large stones.	Slight	Poor: small stones.
Dean	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Poor: small stones.
760*:					
Sedillo	Moderate: percs slowly, large stones.	Moderate: seepage, slope, large stones.	Severe: large stones.	Slight	Poor: small stones.
Clovis	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.
765*:					
Puertecito	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop.					
783 Ponciano	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, small stones, slope.
785*:					
Torriorthents.					
Rock outcrop.					
786*:					
Rock outcrop.					
Badland.					
788*:					
Penistaja	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.
Palma	Slight	Severe: seepage.	Moderate: too sandy.	Slight	Fair: too sandy.
800*:					
Haploborolls.					
Rock outcrop.					

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
801*:					
Calabasas, 2 to 4 percent slopes	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Calabasas, 0 to 2 percent slopes	Severe: percs slowly.	Moderate: seepage.	Moderate: flooding.	Moderate: flooding.	Good.
805*:					
Tanbark	Severe: depth to rock, excess gypsum.	Severe: depth to rock, excess gypsum.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Rayohill	Severe: depth to rock, excess gypsum.	Severe: depth to rock, excess gypsum.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
812 Socorro	Severe: depth to rock, large stones.	Severe: seepage, depth to rock.	Severe: depth to rock, large stones.	Severe: depth to rock.	Poor: depth to rock, small stones.
814*:					
Puice	Severe: depth to rock, excess gypsum.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
Tanbark	Severe: depth to rock, excess gypsum.	Severe: depth to rock, slope, excess gypsum.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Harvey	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
816*:					
Pirodel	Severe: poor filter.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
Harvey	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Pinon	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
818 Mespun	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight	Poor: too sandy.
822 Pirodel	Severe: poor filter.	Severe: seepage.	Slight	Slight	Fair: small stones.
824 Pinon	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
826*:					
Harvey	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Ildecarb	Severe: percs slowly, excess gypsum.	Severe: excess gypsum.	Moderate: large stones.	Slight	Poor: small stones.
Pinon	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
828*:					
Cuate	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
Tanbark	Severe: depth to rock, excess gypsum.	Severe: depth to rock, slope, excess gypsum.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
830*:					
Cuate	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Deama	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Tanbark	Severe: depth to rock, slope, excess gypsum.	Severe: depth to rock, slope, excess gypsum.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
832 Jornaham	Severe: excess gypsum.	Severe: excess gypsum.	Slight	Slight	Poor: small stones.
834*:					
San Mateo	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Good.
Glenberg	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding.	Severe: flooding.	Fair: too sandy.
836*:					
Rayohill	Severe: depth to rock, excess gypsum.	Severe: depth to rock, excess gypsum.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Clovis	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.

See footnote at end of table.

TABLE 8.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
838*:					
Tanbark	Severe: depth to rock, slope, excess gypsum.	Severe: depth to rock, slope, excess gypsum.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Rock outcrop.					
840*:					
Deama	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: area reclaim, large stones, slope.
Rock outcrop.					
845*:					
Winona	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
850*:					
Creel	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
Ponciano	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, small stones, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
11 Armijo	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt.
14 Saneli	Good	Probable	Improbable: too sandy.	Poor: too clayey.
22 Glendale	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, excess salt.
26 Popotosa	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, excess salt, thin layer.
32 Gila	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, excess salt.
37 Agua	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, excess salt.
44 Anthony	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
48 Anthony Variant	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess salt, wetness.
50 Brazito	Good	Probable	Improbable: too sandy.	Poor: thin layer.
52 Saneli	Good	Probable	Improbable: too sandy.	Poor: too clayey.
60. Typic Ustifluvents				
111*:				
Armijo	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt.
Urban land.				
114*:				
Saneli	Good	Probable	Improbable: too sandy.	Poor: too clayey.
Urban land.				

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
116*:				
Caliza Variant	Good	Probable	Probable	Poor: small stones, area reclaim.
Urban land.				
118* Arizo	Fair: large stones.	Probable	Probable	Poor: small stones, area reclaim.
120*:				
Adelino Variant	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Caliza	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
122 Glendale	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, excess salt.
124 Caliza	Good	Probable	Probable	Poor: small stones, area reclaim.
128 Turney Variant	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
132 Gila	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, excess salt.
211 Armijo	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt.
214 Saneli	Good	Probable	Improbable: too sandy.	Poor: too clayey.
222 Glendale	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, excess salt.
226 Popotosa	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, excess salt, thin layer.
232 Gila	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, excess salt.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
244 Anthony	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
250 Brazito	Good	Probable	Improbable: too sandy.	Poor: thin layer.
401*:				
Motoqua	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, large stones, slope.
Rock outcrop.				
403*:				
Puertecito	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
404*:				
Motoqua	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
405 Thunderbird	Poor: area reclaim, low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
410*:				
Clovis	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Penistaja	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
418*:				
Rizozo	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Alicia	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Rock outcrop.				
419*:				
Navajo	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
Alicia	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
421*:				
Glenberg	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Riverwash.				
424 Manzano	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Good.
425 Sparank	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
431*:				
Harvey	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
Winona	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
432*:				
Harvey	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
Winona	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Tanbark	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
434*:				
Rizozo	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Rock outcrop.				
445*:				
Millett	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Sedillo	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
446*:				
Harvey	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
Dean	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
449 Cascajo	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
450 Royosa	Good	Probable	Improbable: too sandy.	Poor: too sandy.
451 Magdalena	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
452*:				
Telescope	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Royosa	Good	Probable	Improbable: too sandy.	Fair: too sandy.
455 Datil	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
459 Pinon	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
460*:				
Lapdun	Fair: slope, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Datil	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
472*:				
Abrazo	Poor: depth to rock, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Motoqua	Poor: area reclaim, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, large stones, slope.
Rock outcrop.				
478*:				
Royosa	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Loarc	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones, area reclaim.
479 Augustine	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
482*:				
Deama	Poor: depth to rock, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
484*:				
Mion	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
San Mateo	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Rock outcrop.				
491*. Riverwash				
510*:				
Guy	Good	Probable	Probable	Poor: small stones, area reclaim.
Dioxice	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
Pena	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
530 Loarc	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones, area reclaim.
540 Goldust	Poor: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
549 Ladron	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
555 Datil	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
556*:				
Loarc	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
Datil	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
556*:				
Majada	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
570*:				
La Fonda	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Good.
Torriorthents.				
Rock outcrop.				
575 Flaco	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
580 Landavaso	Good	Probable	Probable	Poor: small stones, area reclaim.
582*:				
Tanbark	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Winona	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
585*:				
Rock outcrop.				
Travessilla	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
600*:				
Elbutte	Poor: depth to rock, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Courthouse Variant	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
601 Oscura	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, excess salt.
603*:				
Wink	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
603*:				
Dona Ana	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
604 Turney	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
605 Armijo	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt, excess sodium.
606 Largo	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
610 Belen	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt, excess sodium.
615*:				
Anthony	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
Gila	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
620 Bluepoint	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
621*:				
Arizo	Good	Probable	Probable	Poor: small stones, area reclaim.
Riverwash.				
625 Berino	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
627*:				
Berino	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
Dona Ana	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
634*:				
Lozier	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
635*:				
Wink	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
635*:				
Pajarito	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
636*:				
Campana	Fair: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones, thin layer.
Yesum	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
638 Nickel Variant	Good	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
641 Turney	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
645*:				
Yesum, overblown	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
Yesum	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
646 Yesum	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Good.
648*:				
Armijo	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
Glendale	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
Bluepoint	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
649*:				
Nickel	Good	Probable	Probable	Poor: small stones, area reclaim.
Caliza	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
650*:				
Typic Camborthids.				
Nolam	Good	Probable	Probable	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
651------------------- Barana	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
653------------------- Bucklebar	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
655------------------- Nolam	Good-----------------	Probable------------	Probable------------	Poor: small stones, area reclaim.
656*:				
Aftaden--------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Akela----------------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Lava flows.				
657*:				
Akela----------------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Lava flows.				
Armendaris-----------	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
660*. Dune land				
689*:				
Laborcita------------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Pilabo---------------	Poor: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, area reclaim, slope.
Lemitar--------------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
690*:				
Bluepoint------------	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Caliza---------------	Fair: slope.	Probable------------	Probable------------	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
695 Deltajo	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
696*: Lithic Torriorthents.				
Lozier	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
705*: Socorro	Poor: depth to rock, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones.
Flaco	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
709*: Penistaja	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Clovis	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
716*: Creel	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Musofare	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Clovis	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
717*: Penistaja	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Clovis	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
718*: Palma, thick surface	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
Penistaja	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Palma	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
724 Gabaldon	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
735*:				
Netoma	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Claunch	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, thin layer.
736*:				
Winona	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Tanbark	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
La Fonda	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
737*:				
Harvey	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
La Fonda	Fair: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
738*:				
Harvey	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
Dean	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
749*:				
Ildecarb	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Dean	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
760*:				
Sedillo	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Clovis	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
765*:				
Puertecito	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
765*: Rock outcrop.				
783 Ponciano	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
785*: Torriorthents.				
Rock outcrop.				
786*: Rock outcrop.				
Badland.				
788*: Penistaja	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Palma	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
800*: Haploborolls.				
Rock outcrop.				
801*: Calabasas, 2 to 4 percent slopes	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Calabasas, 0 to 2 percent slopes	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
805*: Tanbark	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Rayohill	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
812 Socorro	Poor: depth to rock, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones.
814*: Puice	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Tanbark	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Harvey	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
816*: Pirodel	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
816*:				
Harvey	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, slope.
Pinon	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
818 Mespun	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
822 Pirodel	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
824 Pinon	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
826*:				
Harvey	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
Ildecarb	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Pinon	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
828*:				
Cuate	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Tanbark	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
830*:				
Cuate	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Deama	Poor: depth to rock, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, small stones, slope.
Tanbark	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
832 Jornaham	Fair: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.

See footnote at end of table.

TABLE 9.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
834*:				
San Mateo	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Glenberg	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
836*:				
Rayohill	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
Clovis	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
838*:				
Tanbark	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Rock outcrop.				
840*:				
Deama	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, large stones, slope.
Rock outcrop.				
845*:				
Winona	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
850*:				
Creel	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Ponciano	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
11----------------- Armijo	Moderate: seepage.	Moderate: hard to pack, wetness, excess salt.	Deep to water	Droughty, slow intake, percs slowly.	Percs slowly---	Excess salt, droughty, percs slowly.
14----------------- Saneli	Severe: seepage.	Severe: hard to pack.	Deep to water	Slow intake, percs slowly, excess salt.	Percs slowly---	Excess salt, percs slowly.
22----------------- Glendale	Slight---------	Severe: piping.	Deep to water	Excess salt----	Erodes easily	Excess salt, erodes easily.
26----------------- Popotosa	Severe: seepage.	Severe: seepage, piping.	Deep to water	Excess salt----	Erodes easily, too sandy.	Excess salt, erodes easily.
32----------------- Gila	Moderate: seepage.	Severe: piping.	Deep to water	Excess salt----	Erodes easily	Excess salt, erodes easily.
37----------------- Agua	Severe: seepage.	Severe: seepage, piping.	Deep to water	Excess salt----	Erodes easily, too sandy.	Excess salt, erodes easily.
44----------------- Anthony	Severe: seepage.	Severe: piping.	Deep to water	Soil blowing, excess salt.	Too sandy, soil blowing.	Excess salt.
48----------------- Anthony Variant	Severe: seepage.	Severe: seepage, piping, wetness.	Percs slowly, cutbanks cave, excess salt.	Wetness, droughty, percs slowly.	Erodes easily, wetness, too sandy.	Wetness, excess salt, erodes easily.
50----------------- Brazito	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, soil blowing.	Too sandy, soil blowing.	Excess salt, droughty.
52----------------- Saneli	Severe: seepage.	Severe: hard to pack.	Deep to water	Slow intake, percs slowly, excess salt.	Percs slowly---	Excess salt, percs slowly.
60. Typic Ustifluvents.						
111*: Armijo------------	Slight---------	Moderate: thin layer, hard to pack, excess salt.	Deep to water	Slow intake, percs slowly, excess salt.	Percs slowly---	Excess salt, percs slowly.
Urban land.						
114*: Saneli------------	Severe: seepage.	Severe: hard to pack.	Deep to water	Slow intake, percs slowly, excess salt.	Percs slowly---	Excess salt, percs slowly.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
114*:						
Urban land.						
116*:						
Caliza Variant	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
Urban land.						
118* Arizo	Severe: seepage.	Severe: seepage, large stones.	Deep to water	Large stones, droughty, fast intake.	Large stones, too sandy.	Large stones, droughty.
120*:						
Adelino Variant	Severe: slope.	Moderate: large stones.	Deep to water	Slope	Slope, large stones.	Large stones, slope.
Caliza	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, slope.	Slope, too sandy.	Slope, droughty.
122 Glendale	Slight	Severe: piping.	Deep to water	Soil blowing, excess salt.	Erodes easily, soil blowing.	Excess salt, erodes easily.
124 Caliza	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, slope.	Too sandy	Droughty.
128 Turney Variant	Severe: seepage.	Moderate: thin layer.	Deep to water	Slope	Favorable	Favorable.
132 Gila	Moderate: seepage.	Severe: piping.	Deep to water	Soil blowing, excess salt.	Erodes easily, soil blowing.	Excess salt, erodes easily.
211 Armijo	Moderate: seepage.	Moderate: hard to pack, wetness, excess salt.	Deep to water	Droughty, slow intake, percs slowly.	Percs slowly	Excess salt, droughty, percs slowly.
214 Saneli	Severe: seepage.	Severe: hard to pack.	Deep to water	Slow intake, percs slowly, flooding.	Percs slowly	Excess salt, percs slowly.
222 Glendale	Slight	Severe: piping.	Deep to water	Flooding, excess salt.	Erodes easily	Excess salt, erodes easily.
226 Popotosa	Severe: seepage.	Severe: seepage, piping.	Deep to water	Flooding, excess salt.	Erodes easily, too sandy.	Excess salt, erodes easily.
232 Gila	Moderate: seepage.	Severe: piping.	Deep to water	Flooding, excess salt.	Erodes easily	Excess salt, erodes easily.
244 Anthony	Severe: seepage.	Severe: piping.	Deep to water	Soil blowing, flooding, excess salt.	Too sandy, soil blowing.	Excess salt.
250 Brazito	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, soil blowing, flooding.	Too sandy, soil blowing.	Excess salt, droughty.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
401*: Motoqua	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.						
403*: Puertecito	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Droughty, depth to rock, slope.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.						
404*: Motoqua	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Droughty, depth to rock, slope.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.						
405 Thunderbird	Moderate: depth to rock, slope.	Severe: thin layer.	Deep to water	Percs slowly, depth to rock, slope.	Depth to rock	Depth to rock.
410*: Clovis	Severe: seepage.	Severe: piping.	Deep to water	Slope	Erodes easily, soil blowing.	Erodes easily.
Penistaja	Severe: seepage.	Severe: piping.	Deep to water	Slope	Favorable	Favorable.
418*: Rizozo	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Alicia	Moderate: seepage, slope.	Severe: piping.	Deep to water	Soil blowing, slope.	Erodes easily, soil blowing.	Erodes easily.
Rock outcrop.						
419*: Navajo	Slight	Moderate: hard to pack, excess salt.	Deep to water	Droughty, percs slowly, erodes easily.	Erodes easily, percs slowly.	Excess salt, erodes easily, droughty.
Alicia	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Erodes easily	Erodes easily.
421*: Glenberg	Severe: seepage.	Severe: piping.	Deep to water	Droughty, soil blowing.	Too sandy, soil blowing.	Droughty.
Riverwash.						
424 Manzano	Slight	Severe: piping.	Deep to water	Erodes easily	Erodes easily	Erodes easily.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
425 Sparank	Slight	Moderate: hard to pack.	Deep to water	Percs slowly, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
431*:						
Harvey	Moderate: seepage, slope.	Severe: piping.	Deep to water	Soil blowing, slope.	Erodes easily, soil blowing.	Erodes easily.
Winona	Severe: depth to rock.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Large stones, depth to rock.	Large stones, droughty.
432*:						
Harvey	Moderate: seepage, slope.	Severe: piping.	Deep to water	Soil blowing, slope.	Erodes easily, soil blowing.	Erodes easily.
Winona	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Tanbark	Severe: depth to rock, excess gypsum, seepage.	Severe: thin layer, excess gypsum.	Deep to water	Excess gypsum, depth to rock, slope.	Excess gypsum, slope, depth to rock.	Slope, excess salt.
434*:						
Rizozo	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Rock outcrop.						
445*:						
Millett	Severe: slope.	Slight	Deep to water	Droughty, slope.	Slope, soil blowing.	Slope, droughty.
Sedillo	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.	Large stones, slope, droughty.
446*:						
Harvey	Moderate: seepage.	Severe: piping.	Deep to water	Soil blowing	Erodes easily, soil blowing.	Erodes easily.
Dean	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Favorable	Favorable.
449 Cascajo	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, rooting depth.	Slope, too sandy.	Slope, droughty, rooting depth.
450 Royosa	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
451 Magdalena	Moderate: slope.	Moderate: large stones.	Deep to water	Droughty, percs slowly, slope.	Large stones, percs slowly.	Large stones, droughty.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
452*:						
Telescope	Severe: seepage.	Severe: piping.	Deep to water	Fast intake, soil blowing.	Soil blowing	Favorable.
Royosa	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
455 Datil	Severe: slope.	Slight	Deep to water	Soil blowing, slope.	Slope	Slope.
459 Pinon	Moderate: slope.	Severe: piping.	Deep to water	Soil blowing, slope.	Favorable	Favorable.
460*:						
Lapdun	Severe: slope.	Slight	Deep to water	Droughty, slope.	Slope	Slope, droughty.
Datil	Severe: slope.	Slight	Deep to water	Slope	Slope	Slope.
472*:						
Abrazo	Severe: slope.	Severe: thin layer.	Deep to water	Percs slowly, depth to rock, slope.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
Motoqua	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.						
478*:						
Royosa	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
Loarc	Severe: seepage.	Slight	Deep to water	Fast intake, soil blowing, slope.	Too sandy, soil blowing.	Favorable.
479 Augustine	Moderate: seepage, slope.	Severe: piping.	Deep to water	Soil blowing, slope.	Erodes easily, soil blowing.	Erodes easily.
482*:						
Deama	Severe: depth to rock, slope.	Severe: seepage, large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.						
484*:						
Mion	Severe: depth to rock.	Severe: thin layer.	Deep to water	Percs slowly, depth to rock, slope.	Depth to rock, percs slowly.	Depth to rock, percs slowly.
San Mateo	Moderate: seepage, slope.	Severe: piping.	Deep to water	Soil blowing, slope.	Favorable	Favorable.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
484*: Rock outcrop.						
491*. Riverwash						
510*: Guy	Severe: seepage.	Severe: thin layer.	Deep to water	Droughty, slope.	Large stones	Favorable.
Dioxice	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
Pena	Moderate: seepage, slope.	Moderate: large stones.	Deep to water	Large stones, droughty, soil blowing.	Large stones	Large stones.
530 Loarc	Severe: seepage.	Slight	Deep to water	Fast intake, soil blowing, slope.	Too sandy, soil blowing.	Favorable.
540 Goldust	Moderate: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, percs slowly.	Large stones, percs slowly.	Large stones, droughty, percs slowly.
549 Ladron	Severe: seepage, slope.	Severe: thin layer.	Deep to water	Droughty, slope.	Slope, large stones.	Large stones, slope, droughty.
555 Datil	Severe: slope.	Slight	Deep to water	Slope	Slope	Slope.
556*: Loarc	Severe: seepage.	Slight	Deep to water	Soil blowing, slope.	Too sandy, soil blowing.	Favorable.
Datil	Severe: slope.	Slight	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.
Majada	Moderate: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Large stones, erodes easily.	Large stones, erodes easily.
570*: La Fonda	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Soil blowing, slope.	Favorable	Favorable.
Torriorthents.						
Rock outcrop.						
575 Flaco	Moderate: seepage, depth to rock, slope.	Severe: piping.	Deep to water	Depth to rock, slope.	Large stones, depth to rock.	Large stones, erodes easily.
580 Landavaso	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, soil blowing, slope.	Too sandy, soil blowing.	Droughty.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
582*:						
Tanbark	Severe: depth to rock, slope, excess gypsum.	Severe: thin layer, excess gypsum.	Deep to water	Excess gypsum, depth to rock, slope.	Excess gypsum, slope, depth to rock.	Slope, excess salt, erodes easily.
Winona	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
585*:						
Rock outcrop.						
Travessilla	Severe: depth to rock.	Severe: thin layer.	Deep to water	Droughty, depth to rock.	Large stones, depth to rock.	Large stones, droughty.
600*:						
Elbutte	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Percs slowly, depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Courthouse Variant	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.						
601 Oscura	Slight	Moderate: hard to pack.	Deep to water	Percs slowly, flooding.	Erodes easily, percs slowly.	Excess salt, erodes easily, percs slowly.
603*:						
Wink	Severe: seepage.	Moderate: thin layer.	Deep to water	Droughty, fast intake, soil blowing.	Soil blowing	Droughty.
Dona Ana	Moderate: seepage.	Moderate: thin layer.	Deep to water	Fast intake	Favorable	Favorable.
604 Turney	Moderate: seepage, slope.	Severe: piping.	Deep to water	Fast intake, slope.	Erodes easily, soil blowing.	Erodes easily.
605 Armijo	Slight	Severe: excess sodium, excess salt.	Deep to water	Droughty, slow intake, percs slowly.	Percs slowly	Excess salt, excess sodium.
606 Largo	Slight	Moderate: piping.	Deep to water	Favorable	Erodes easily	Erodes easily.
610 Belen	Moderate: seepage.	Severe: piping, excess sodium, excess salt.	Deep to water	Droughty, slow intake, percs slowly.	Favorable	Excess salt, excess sodium, droughty.
615*:						
Anthony	Severe: seepage.	Severe: piping.	Deep to water	Droughty, fast intake, soil blowing.	Erodes easily, soil blowing.	Erodes easily, droughty.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
615*: Gila	Moderate: seepage.	Severe: piping.	Deep to water	Soil blowing	Soil blowing	Favorable.
620 Bluepoint	Severe: seepage.	Severe: piping.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
621*: Arizo	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, soil blowing.	Too sandy	Droughty.
Riverwash.						
625 Berino	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Soil blowing	Favorable.
627*: Berino	Moderate: seepage, slope.	Severe: piping.	Deep to water	Fast intake, slope.	Soil blowing	Favorable.
Dona Ana	Moderate: seepage, slope.	Moderate: thin layer.	Deep to water	Slope	Favorable	Favorable.
634*: Lozier	Severe: depth to rock, slope.	Severe: thin layer, large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.						
635*: Wink	Severe: seepage.	Moderate: thin layer.	Deep to water	Droughty, fast intake, soil blowing.	Soil blowing	Droughty.
Pajarito	Severe: seepage.	Severe: piping.	Deep to water	Fast intake, soil blowing, slope.	Soil blowing	Favorable.
636*: Campana	Severe: excess gypsum, seepage.	Severe: excess gypsum, piping.	Deep to water	Excess gypsum, soil blowing, slope.	Excess gypsum, erodes easily, soil blowing.	Too arid, erodes easily.
Yesum	Severe: seepage, excess gypsum.	Severe: excess gypsum, thin layer.	Deep to water	Slope, erodes easily, excess gypsum.	Erodes easily, excess gypsum.	Too arid, erodes easily.
638 Nickel Variant	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, slope.	Slope, too sandy.	Slope, droughty.
641 Turney	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Erodes easily	Erodes easily.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
645*:						
Yesum, overblown	Severe: seepage, excess gypsum.	Severe: excess gypsum, thin layer.	Deep to water	Erodes easily, excess salt, excess gypsum.	Erodes easily, excess gypsum.	Favorable.
Yesum	Severe: seepage, excess gypsum.	Severe: excess gypsum, thin layer.	Deep to water	Erodes easily, excess gypsum.	Erodes easily, excess gypsum.	Erodes easily.
646 Yesum	Severe: seepage, excess gypsum.	Severe: excess gypsum, thin layer.	Deep to water	Slope, erodes easily, excess gypsum.	Erodes easily, excess gypsum.	Erodes easily.
648*:						
Armijo	Slight	Severe: excess salt.	Deep to water	Droughty, percs slowly.	Erodes easily, percs slowly.	Excess salt, erodes easily, droughty.
Glendale	Slight	Severe: piping, excess salt.	Deep to water	Droughty, excess salt.	Erodes easily	Excess salt, erodes easily, droughty.
Bluepoint	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Excess salt, droughty.
649*:						
Nickel	Severe: slope.	Severe: seepage.	Deep to water	Droughty, slope.	Slope	Slope, droughty.
Caliza	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, slope.	Slope, too sandy.	Slope, droughty.
650*:						
Typic Camborthids.						
Nolam	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, slope.	Slope	Slope, droughty.
651 Barana	Moderate: seepage.	Moderate: piping.	Deep to water	Rooting depth, erodes easily.	Erodes easily	Erodes easily, rooting depth.
653 Bucklebar	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Erodes easily	Erodes easily.
655 Nolam	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, slope.	Favorable	Droughty.
656*:						
Aftaden	Severe: depth to rock.	Severe: thin layer.	Deep to water	Droughty, fast intake, soil blowing.	Depth to rock, soil blowing.	Droughty, depth to rock.
Akela	Severe: depth to rock.	Severe: seepage.	Deep to water	Droughty, fast intake, soil blowing.	Large stones, depth to rock.	Large stones, droughty.
Lava flows.						

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
657*:						
Akela	Severe: depth to rock.	Severe: seepage.	Deep to water	Droughty	Large stones, depth to rock.	Large stones, droughty.
Lava flows.						
Armendaris	Moderate: seepage.	Moderate: thin layer.	Deep to water	Percs slowly, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
660*. Dune land.						
689*:						
Laborcita	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope	Slope.
Pilabo	Severe: slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.	Large stones, slope, droughty.
Lemitar	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
690*:						
Bluepoint	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Droughty, fast intake.	Slope, too sandy.	Slope, droughty.
Caliza	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy.	Slope, droughty.
695 Deltajo	Severe: slope.	Severe: piping.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
696*:						
Lithic Torriorthents.						
Lozier	Severe: depth to rock, slope.	Severe: thin layer, large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.						
705*:						
Socorro	Severe: seepage.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Large stones, depth to rock.	Large stones, droughty, depth to rock.
Flaco	Severe: slope.	Severe: piping.	Deep to water	Soil blowing, depth to rock, slope.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
709*:						
Penistaja	Severe: seepage.	Severe: piping.	Deep to water	Slope	Favorable	Favorable.
Clovis	Severe: seepage.	Severe: piping.	Deep to water	Slope	Erodes easily, soil blowing.	Erodes easily.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
716*:						
Creel	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
Musofare	Severe: slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Clovis	Severe: seepage.	Severe: piping.	Deep to water	Slope	Erodes easily, soil blowing.	Erodes easily.
717*:						
Penistaja	Severe: seepage.	Severe: piping.	Deep to water	Fast intake, slope.	Favorable	Favorable.
Clovis	Severe: seepage.	Severe: piping.	Deep to water	Fast intake, slope.	Erodes easily, soil blowing.	Erodes easily.
718*:						
Palma, thick surface	Severe: seepage.	Severe: piping.	Deep to water	Fast intake, soil blowing, rooting depth.	Soil blowing	Rooting depth.
Penistaja	Severe: seepage.	Severe: piping.	Deep to water	Slope	Favorable	Favorable.
Palma	Severe: seepage.	Severe: piping.	Deep to water	Fast intake, soil blowing, rooting depth.	Soil blowing	Rooting depth.
724 Gabaldon	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
735*:						
Netoma	Severe: seepage, excess gypsum.	Severe: thin layer, excess gypsum.	Deep to water	Slope, erodes easily, excess gypsum.	Erodes easily, excess gypsum.	Excess salt, erodes easily.
Claunch	Severe: excess gypsum, seepage.	Severe: excess gypsum, piping.	Deep to water	Excess gypsum, slope, excess salt.	Erodes easily, soil blowing, excess gypsum.	Erodes easily, too arid.
736*:						
Winona	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Tanbark	Severe: excess gypsum, depth to rock, seepage.	Severe: thin layer, excess gypsum.	Deep to water	Excess gypsum, depth to rock, slope.	Excess gypsum, slope, depth to rock.	Slope, excess salt.
La Fonda	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope	Erodes easily	Erodes easily.
737*:						
Harvey	Moderate: seepage, slope.	Severe: piping.	Deep to water	Soil blowing, slope.	Erodes easily, soil blowing.	Erodes easily.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
737*:						
La Fonda	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Soil blowing, slope.	Favorable	Favorable.
738*:						
Harvey	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Erodes easily	Erodes easily.
Dean	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Favorable	Favorable.
749*:						
Ildecarb	Severe: excess gypsum.	Severe: excess gypsum.	Deep to water	Droughty, slope, excess gypsum.	Large stones, excess gypsum.	Large stones, droughty.
Dean	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Favorable	Favorable.
760*:						
Sedillo	Moderate: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Large stones	Large stones, droughty.
Clovis	Severe: seepage.	Severe: piping.	Deep to water	Favorable	Erodes easily, soil blowing.	Erodes easily.
765*:						
Puertecito	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.						
783 Ponciano	Severe: slope.	Moderate: large stones.	Deep to water	Percs slowly, slope, excess salt.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
785*:						
Torriorthents.						
Rock outcrop.						
786*:						
Rock outcrop.						
Badland.						
788*:						
Penistaja	Severe: seepage.	Severe: piping.	Deep to water	Favorable	Favorable	Favorable.
Palma	Severe: seepage.	Severe: piping.	Deep to water	Fast intake, soil blowing, rooting depth.	Soil blowing	Rooting depth.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
800*:						
Haploborolls.						
Rock outcrop.						
801*:						
Calabasas, 2 to 4 percent slopes	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Erodes easily	Erodes easily.
Calabasas, 0 to 2 percent slopes	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Erodes easily	Erodes easily.
805*:						
Tanbark	Severe: excess gypsum, depth to rock, seepage.	Severe: thin layer, excess gypsum.	Deep to water	Excess gypsum, depth to rock, slope.	Excess gypsum, depth to rock, erodes easily.	Excess salt, erodes easily.
Rayohill	Severe: seepage, excess gypsum.	Severe: thin layer, excess gypsum.	Deep to water	Depth to rock, excess gypsum.	Depth to rock, erodes easily, excess gypsum.	Excess salt, erodes easily, depth to rock.
812 Socorro	Severe: seepage.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Large stones, depth to rock.	Large stones, droughty, depth to rock.
814*:						
Puice	Severe: slope, excess gypsum.	Severe: seepage, excess gypsum.	Deep to water	Excess gypsum, droughty, depth to rock.	Excess gypsum, slope, large stones.	Large stones, slope, droughty.
Tanbark	Severe: excess gypsum, depth to rock, slope.	Severe: thin layer, excess gypsum.	Deep to water	Excess gypsum, slope, droughty.	Slope, erodes easily, droughty.	Slope, excess salt, erodes easily.
Harvey	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Erodes easily	Erodes easily.
816*:						
Pirodel	Severe: seepage, slope.	Moderate: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Slope, soil blowing.	Slope, droughty.
Harvey	Severe: slope.	Severe: piping.	Deep to water	Soil blowing, slope.	Slope, erodes easily, soil blowing.	Slope, erodes easily.
Pinon	Severe: depth to rock, slope.	Severe: piping.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
818 Mespun	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
822 Pirodel	Severe: seepage.	Moderate: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Soil blowing	Droughty.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
824: Pinon	Severe: depth to rock, slope.	Severe: piping.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
826*:						
Harvey	Moderate: seepage, slope.	Severe: piping.	Deep to water	Soil blowing, slope.	Erodes easily, soil blowing.	Erodes easily.
Ildecarb	Severe: excess gypsum.	Severe: excess gypsum.	Deep to water	Droughty, slope, excess gypsum.	Large stones, excess gypsum.	Large stones, droughty.
Pinon	Severe: depth to rock.	Severe: piping.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
828*:						
Cuate	Severe: slope.	Moderate: thin layer, large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Tanbark	Severe: depth to rock, excess gypsum.	Severe: thin layer, excess gypsum.	Deep to water	Excess gypsum, slope, droughty.	Excess gypsum, depth to rock, erodes easily.	Excess salt, erodes easily.
830*:						
Cuate	Severe: slope.	Moderate: thin layer, large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Deama	Severe: depth to rock, slope.	Severe: seepage, large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Tanbark	Severe: depth to rock, slope, excess gypsum.	Severe: thin layer, excess gypsum.	Deep to water	Depth to rock, slope, excess gypsum.	Slope, depth to rock, excess gypsum.	Slope, excess salt, depth to rock.
832: Jornaham	Severe: seepage, excess gypsum.	Severe: excess gypsum.	Deep to water	Slope, excess gypsum.	Large stones, excess gypsum.	Large stones.
834*:						
San Mateo	Moderate: seepage.	Severe: piping.	Deep to water	Flooding	Erodes easily	Erodes easily.
Glenberg	Severe: seepage.	Severe: piping.	Deep to water	Droughty, soil blowing.	Too sandy, soil blowing.	Droughty.
836*:						
Rayohill	Severe: seepage, excess gypsum.	Severe: thin layer, excess gypsum.	Deep to water	Droughty, soil blowing, depth to rock.	Depth to rock, excess gypsum.	Excess salt, depth to rock.
Clovis	Severe: seepage.	Severe: piping.	Deep to water	Slope	Erodes easily, soil blowing.	Erodes easily.

See footnote at end of table.

TABLE 10.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
838*:						
Tanbark	Severe: excess gypsum, depth to rock, seepage.	Severe: thin layer, excess gypsum.	Deep to water	Excess gypsum, slope, droughty.	Excess gypsum, slope, depth to rock.	Slope, excess salt.
Rock outcrop.						
840*:						
Deama	Severe: depth to rock, slope.	Severe: piping, large stones.	Deep to water	Large stones, depth to rock, slope.	Slope, large stones, depth to rock.	Large stones, slope, depth to rock.
Rock outcrop.						
845*:						
Winona	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Large stones, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.						
850*:						
Creel	Severe: slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Ponciano	Severe: slope.	Moderate: large stones.	Deep to water	Percs slowly, slope, excess salt.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
11---------------Armijo	0-10	Clay-------------	CL, CH	A-7	0	100	100	95-100	90-100	45-60	20-30
	10-44	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	90-100	45-60	20-30
	44-60	Sandy clay loam	CL	A-6	0	100	100	80-95	50-65	30-35	10-15
14---------------Saneli	0-29	Clay-------------	CH	A-7	0	100	100	95-100	90-95	55-75	35-50
	29-60	Fine sand, loamy sand, sand.	SP-SM, SM	A-2, A-3	0	100	100	60-80	5-15	15-20	NP-5
22---------------Glendale	0-19	Clay loam--------	CL	A-6	0	95-100	85-100	80-90	75-85	30-35	10-15
	19-60	Clay loam, loam, silt loam.	CL-ML, CL	A-4, A-6	0	85-100	85-100	85-100	80-90	25-35	5-15
26---------------Popotosa	0-11	Clay loam--------	CL	A-6	0	100	95-100	80-90	70-75	30-35	10-15
	11-29	Clay loam, loam	CL-ML, CL	A-4, A-6	0	100	95-100	75-85	65-75	25-35	5-15
	29-60	Sand, coarse sand, loamy fine sand.	SM	A-2	0	100	95-100	50-80	10-25	---	NP
32---------------Gila	0-14	Clay loam--------	CL	A-6	0	95-100	90-100	80-95	65-80	30-35	10-15
	14-24	Silt loam, very fine sandy loam.	ML	A-4	0	95-100	90-100	75-90	60-75	20-25	NP-5
	24-60	Stratified very fine sandy loam to silty clay loam.	ML	A-4	0	95-100	90-100	80-95	60-75	20-25	NP-5
37---------------Agua	0-8	Clay loam--------	CL	A-6	0	90-100	85-100	75-85	65-75	30-35	10-15
	8-18	Silt loam--------	ML	A-4	0	90-100	85-100	85-95	80-90	20-25	NP-5
	18-23	Very fine sandy loam.	ML	A-4	0	90-100	85-100	80-95	70-80	20-25	NP-5
	23-60	Fine sand--------	SM	A-2	0	90-100	85-100	75-90	15-25	---	NP
44---------------Anthony	0-12	Sandy loam-------	SM	A-2, A-4	0	80-100	75-100	60-75	30-40	20-25	NP-5
	12-60	Stratified silt loam to fine sand.	SM	A-2, A-4	0-5	85-95	80-90	60-75	30-50	20-25	NP-5
48---------------Anthony Variant	0-10	Sandy clay loam	SM-SC	A-4	0	100	100	80-90	35-55	25-30	5-10
	10-25	Loamy very fine sand.	ML	A-4	0	100	100	75-90	50-65	20-25	NP-5
	25-37	Clay, clay loam	CL, CH	A-6, A-7	0	100	100	85-95	70-85	35-55	15-30
	37-60	Sand-------------	SP, SP-SM	A-3	0-10	95-100	85-100	50-70	0-10	---	NP
50---------------Brazito	0-10	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-85	30-40	15-20	NP-5
	10-16	Loamy fine sand	SM	A-2	0	95-100	90-100	70-80	25-35	---	NP
	16-60	Coarse sand------	SP-SM	A-1	0	95-100	90-100	40-50	5-10	---	NP
52---------------Saneli	0-15	Clay-------------	CH	A-7	0	100	100	95-100	90-95	55-75	35-50
	15-60	Fine sand, loamy fine sand, sand.	SP-SM, SM	A-2, A-3	0	100	100	60-80	5-15	15-20	NP-5
60. Typic Ustifluvents											
111*: Armijo----------	0-2	Silty clay-------	CL, CH	A-7	0	100	100	95-100	85-95	45-70	25-45
	2-60	Sandy clay, clay, silty clay.	CH	A-7	0	100	100	95-100	50-100	50-75	25-50
Urban land.											

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
114*:											
Saneli----------	0-23	Silty clay-------	CH	A-7	0	100	100	95-100	90-95	55-75	35-50
	23-60	Fine sand, loamy fine sand, sand.	SP-SM, SM	A-2, A-3	0	100	100	60-80	5-15	15-20	NP-5
Urban land.											
116*:											
Caliza Variant--	0-2	Gravelly loamy sand.	GM, SM	A-2, A-1	0	55-80	50-75	30-45	15-30	---	NP
	2-5	Sandy loam-------	SM	A-4	0	80-100	75-100	55-70	35-50	20-25	NP-5
	5-28	Gravelly sandy clay loam, sandy clay loam.	GM-GC, GC, SM-SC, SC	A-2, A-4, A-6	0	55-95	50-90	40-60	30-50	25-35	5-15
	28-60	Very gravelly coarse sand, very gravelly loamy sand.	GP-GM, GM	A-1	0-15	35-55	30-50	15-35	5-15	---	NP
Urban land.											
118*------------- Arizo	0-3	Very stony loamy sand.	GP-GM, GM	A-1	30-40	45-55	40-50	10-25	5-15	---	NP
	3-60	Stratified cobbly coarse sand to extremely gravelly loamy sand.	GP-GM, GP	A-1	10-35	35-55	20-50	10-30	0-10	---	NP
120*:											
Adelino Variant-	0-4	Very stony sandy loam.	GM, SM	A-2	30-50	50-75	45-70	35-45	25-35	20-25	NP-5
	4-54	Gravelly sandy clay loam.	SM-SC, SC, GM-GC, GC	A-2, A-4, A-6	0-15	65-80	60-75	45-55	30-40	25-35	5-15
	54-60	Gravelly fine sandy loam.	SM	A-1, A-2	0-15	65-80	60-75	40-55	20-35	20-25	NP-5
Caliza----------	0-4	Very stony sandy loam.	GM, SM	A-2	30-50	55-80	45-70	35-45	25-35	---	NP
	4-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	0-10	35-45	25-40	10-20	5-10	---	NP
122-------------- Glendale	0-8	Sandy loam-------	SM	A-2, A-4	0	95-100	85-100	60-75	30-40	20-25	NP-5
	8-60	Clay loam, silty clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	85-100	85-100	85-100	80-90	25-35	5-15
124-------------- Caliza	0-22	Very gravelly sandy loam.	GM	A-1	0	30-50	25-45	20-35	10-20	20-25	NP-5
	22-60	Stratified very gravelly loamy sand to extremely gravelly sand.	GP, GP-GM	A-1	0	25-50	20-40	10-30	0-10	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
128-------------- Turney Variant	0-2	Gravelly sandy loam.	SM	A-1, A-2	0-10	60-80	55-75	35-50	20-35	20-25	NP-5
	2-35	Gravelly loam, gravelly sandy clay loam.	SM-SC, GM-GC	A-4	0-10	60-80	55-75	45-65	35-50	25-30	5-10
	35-49	Gravelly sandy loam.	SM	A-1, A-2	0-10	60-80	55-75	35-50	20-35	20-25	NP-5
	49-60	Very gravelly loamy sand.	GM	A-1	0-10	35-55	30-50	20-35	10-20	---	NP
132-------------- Gila	0-9	Fine sandy loam	ML	A-4	0	95-100	90-100	75-90	50-60	20-25	NP-5
	9-51	Silt loam, very fine sandy loam.	ML	A-4	0	95-100	90-100	75-90	60-75	20-25	NP-5
	51-60	Stratified very fine sandy loam to silty clay loam.	ML	A-4	0	95-100	90-100	80-95	60-75	20-25	NP-5
211-------------- Armijo	0-10	Clay--------------	CL, CH	A-7	0	100	100	95-100	90-100	45-60	20-30
	10-44	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	90-100	45-60	20-30
	44-60	Sandy clay loam	CL	A-6	0	100	100	80-95	50-65	30-35	10-15
214-------------- Saneli	0-29	Clay--------------	CH	A-7	0	100	100	95-100	90-95	55-75	35-50
	29-60	Fine sand, loamy sand, sand.	SP-SM, SM	A-2, A-3	0	100	100	60-80	5-15	15-20	NP-5
222-------------- Glendale	0-19	Clay loam---------	CL	A-6	0	95-100	85-100	80-90	75-85	30-35	10-15
	19-60	Loam, clay loam	CL-ML, CL	A-4, A-6	0	85-100	85-100	85-100	80-90	25-35	5-15
226-------------- Popotosa	0-11	Clay loam---------	CL	A-6	0	100	95-100	80-90	70-75	30-35	10-15
	11-29	Loam, clay loam	CL-ML, CL	A-4, A-6	0	100	95-100	75-85	65-75	25-35	5-15
	29-60	Sand--------------	SM	A-2	0	100	95-100	60-80	15-25	---	NP
232-------------- Gila	0-14	Clay loam---------	CL	A-6	0	95-100	90-100	80-95	65-80	30-35	10-15
	14-60	Stratified silt loam to sand.	ML	A-4	0	95-100	90-100	75-90	60-75	20-25	NP-5
244-------------- Anthony	0-12	Sandy loam--------	SM	A-2, A-4	0	80-100	75-100	60-75	30-40	20-25	NP-5
	12-60	Stratified silt loam to fine sand.	SM	A-2, A-4	0-5	85-95	80-90	60-75	30-50	20-25	NP-5
250-------------- Brazito	0-10	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-85	30-40	15-20	NP-5
	10-14	Loamy fine sand	SM	A-2	0	95-100	90-100	70-80	25-35	---	NP
	14-60	Coarse sand-------	SP-SM	A-1	0	95-100	90-100	40-50	5-10	---	NP
401*:											
Motoqua----------	0-3	Very stony loam	GM-GC, GM	A-2, A-4	35-50	50-65	50-65	40-50	30-40	20-30	NP-10
	3-16	Very cobbly silt loam, very cobbly loam, very cobbly clay loam.	GM-GC, GC	A-4, A-6	35-45	55-65	55-65	50-55	35-40	25-35	5-15
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
403*:											
Puertecito------	0-2	Very gravelly loam.	GM	A-2, A-4	10-15	45-60	40-55	35-45	30-40	20-25	NP-5
	2-14	Very gravelly loam, very gravelly clay loam.	GM-GC, GC	A-2, A-4, A-6	10-25	40-60	35-55	35-50	30-45	25-35	5-15
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
404*:											
Motoqua---------	0-2	Gravelly loam----	CL-ML	A-4	0-10	65-85	60-75	55-70	50-60	20-25	5-10
	2-16	Very gravelly clay loam, very gravelly loam.	GC	A-2	10-25	40-60	35-55	25-45	20-30	25-30	10-15
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
405------------- Thunderbird	0-10	Gravelly loam----	GM-GC, GC, SM-SC, SC	A-4, A-6	10-15	65-90	60-85	50-60	40-50	25-35	5-15
	10-29	Clay, clay loam, gravelly clay.	CL, CH	A-7	0-10	65-95	60-90	55-70	50-65	40-60	25-35
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
410*:											
Clovis----------	0-6	Fine sandy loam	SM, ML	A-4	0	100	100	70-90	40-60	20-25	NP-5
	6-60	Sandy clay loam, clay loam, loam.	CL, CL-ML	A-6, A-4	0	100	100	90-100	50-85	25-35	5-15
Penistaja-------	0-4	Fine sandy loam	ML, SM	A-4	0	100	100	90-100	40-60	20-25	NP-5
	4-60	Sandy clay loam, clay loam, loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	100	100	95-100	45-75	25-35	5-15
418*:											
Rizozo----------	0-4	Channery loam----	GM-GC, CL-ML	A-4	0-10	55-75	55-75	45-70	35-60	25-30	5-10
	4-12	Loam, silt loam, channery silt loam.	GM-GC, SM-SC, CL-ML	A-4	0-15	65-90	60-85	45-75	35-60	25-30	5-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Alicia----------	0-5	Very fine sandy loam.	SM, ML	A-4	0	90-100	85-100	75-90	40-60	20-25	NP-5
	5-60	Loam, silt loam, silty clay loam.	CL-ML	A-4	0	90-100	85-100	85-100	75-90	25-30	5-10
Rock outcrop.											
419*:											
Navajo----------	0-3	Silt loam--------	CL-ML	A-4	0	100	100	90-100	75-85	25-30	5-10
	3-16	Silty clay loam	CL	A-6	0	100	100	90-100	80-90	35-40	15-20
	16-60	Silty clay-------	CH	A-7	0	100	100	90-100	80-90	50-55	30-35
Alicia----------	0-3	Loam-------------	CL-ML	A-4	0	90-100	85-100	80-95	75-90	25-30	5-10
	3-36	Clay loam, silty clay loam, loam.	CL	A-6	0	90-100	85-100	85-100	75-90	30-35	10-15
	36-60	Loam, silt loam, silty clay loam.	CL-ML	A-4	0	90-100	85-100	85-100	75-90	25-30	5-10

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
421*:											
Glenberg	0-8	Sandy loam	SM, SM-SC	A-4, A-2	0	95-100	85-100	60-80	30-45	20-25	NP-10
	8-60	Stratified loamy sand to loam.	SM	A-2, A-4	0	90-100	75-100	50-70	25-40	20-25	NP-5
Riverwash.											
424 Manzano	0-8	Silt loam	CL-ML	A-4	0	100	100	90-100	80-90	20-30	5-10
	8-60	Loam, clay loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	90-100	80-90	25-35	5-15
425 Sparank	0-2	Silty clay loam	CL	A-6, A-7	0	95-100	90-100	80-95	75-90	35-45	15-20
	2-60	Silty clay loam, clay loam, silty clay.	CL, CH	A-7	0	95-100	90-100	80-95	70-90	40-55	15-30
431*:											
Harvey	0-2	Fine sandy loam	SM, ML	A-4, A-2	0	80-100	80-100	55-90	30-60	20-30	NP-5
	2-52	Clay loam, sandy clay loam, loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	80-100	80-100	70-100	45-80	25-35	5-15
	52-60	Gravelly sandy loam, gravelly sandy clay loam, fine sandy loam.	SM, SM-SC	A-1, A-2	0-10	60-90	55-85	35-65	20-35	20-30	NP-10
Winona	0-2	Very channery fine sandy loam.	GM, SM	A-1, A-2	15-30	40-65	35-60	25-40	15-30	20-25	NP-5
	2-10	Very gravelly loam, very channery loam, very gravelly fine sandy loam.	GM-GC, SM-SC	A-2	15-30	40-65	35-60	25-35	10-35	25-30	5-10
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
432*:											
Harvey	0-2	Fine sandy loam	SM, ML	A-4, A-2	0	80-100	80-100	60-90	30-60	20-30	NP-5
	2-60	Clay loam, sandy clay loam, loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	80-100	80-100	70-100	45-80	25-35	5-15
Winona	0-2	Very flaggy loam	GM-GC, SM-SC	A-2	30-50	50-80	40-70	35-50	25-35	25-30	5-10
	2-8	Very cobbly loam, very flaggy loam, very cobbly sandy loam.	GM-GC, SM-SC	A-2, A-4	30-50	50-80	45-75	40-55	20-45	25-30	5-10
	8-17	Very gravelly loam, very channery loam, very gravelly fine sandy loam.	GM-GC, SM-SC	A-2	15-30	40-65	35-60	25-35	10-35	25-30	5-10
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Tanbark	0-1	Sandy loam	SM	A-4	0	100	100	70-85	40-50	20-25	NP-5
	1-10	Gypsiferous material.	---	---	---	---	---	---	---	---	---
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
434*:											
Rizozo----------	0-2	Gravelly sandy loam.	SM, GM	A-2	0-10	55-75	55-75	40-60	25-35	20-25	NP-5
	2-10	Gravelly sandy loam, gravelly loam.	GM-GC, SM-SC, CL-ML	A-4	0-15	65-90	60-75	45-75	35-60	25-30	5-10
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
445*:											
Millett---------	0-3	Gravelly sandy loam.	SM	A-2, A-1	0-5	75-85	65-75	40-50	20-30	20-25	NP-5
	3-18	Gravelly loam, gravelly sandy clay loam.	SM-SC, CL-ML	A-4	5-15	75-85	65-75	55-70	40-55	20-30	5-10
	18-60	Very gravelly sandy clay loam, very gravelly sandy loam.	GM-GC	A-2	5-15	45-60	35-50	25-35	15-25	20-30	5-10
Sedillo---------	0-3	Very gravelly fine sandy loam.	GM, SM	A-1	15-30	40-65	35-60	25-45	10-20	20-25	NP-5
	3-19	Very gravelly clay loam, very gravelly sandy clay loam.	GM-GC, GC	A-2	15-30	40-65	35-60	30-40	20-30	25-35	5-15
	19-60	Extremely gravelly sandy loam, very cobbly sandy clay loam, fine sandy loam.	GM-GC	A-2	15-45	35-55	30-50	30-40	25-35	25-30	5-10
446*:											
Harvey----------	0-2	Fine sandy loam	SM, ML	A-4, A-2	0	80-100	80-100	60-90	30-60	20-30	NP-5
	2-60	Clay loam, sandy clay loam, loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	80-100	80-100	70-100	45-80	25-35	5-15
Dean------------	0-2	Gravelly fine sandy loam.	SM, GM	A-4	0-10	65-85	55-75	45-60	35-50	20-25	NP-5
	2-9	Gravelly loam, gravelly sandy clay loam.	SM-SC, SC	A-2, A-4, A-6	0-10	65-85	55-75	40-55	30-50	25-35	5-15
	9-60	Gravelly loam, gravelly sandy clay loam, gravelly clay loam.	SM-SC, CL-ML, CL, SC	A-2, A-4, A-6	0-10	65-85	55-75	40-65	30-55	25-35	5-15
449------------- Cascajo	0-9	Very gravelly sandy loam.	GM	A-1, A-2	0-15	35-65	30-50	15-40	10-35	---	NP
	9-17	Very gravelly sandy loam, very gravelly loamy sand, very gravelly sand.	GP-GM, GP, GM	A-1	0-15	35-55	30-50	15-30	0-20	---	NP
	17-60	Very gravelly loamy sand, very gravelly sand, gravelly sand.	GP, SP, GP-GM, SP-SM	A-1	0-15	35-55	30-50	15-30	0-10	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
450--------------- Royosa	0-4	Fine sand--------	SP-SM, SM	A-2, A-3	0	100	100	75-85	5-25	---	NP
	4-60	Loamy sand, fine sand, sand.	SP-SM, SM	A-2, A-3	0	100	100	50-80	5-35	---	NP
451--------------- Magdalena	0-2	Gravelly loam----	SM-SC	A-2, A-4	10-15	80-90	65-75	35-50	30-45	25-30	5-10
	2-60	Very gravelly sandy clay, very gravelly clay, very gravelly clay loam.	GC, SC	A-2, A-7	10-25	60-75	35-55	30-45	25-40	40-50	20-30
452*: Telescope--------	0-3	Loamy fine sand	SM	A-2	0	100	95-100	75-90	20-35	---	NP
	3-45	Fine sandy loam, sandy loam.	SM-SC, SM	A-2, A-4	0	80-95	75-90	50-75	25-40	15-25	NP-10
	45-60	Loamy fine sand, gravelly loamy fine sand.	SM	A-1, A-2	0	65-95	60-90	35-60	10-25	---	NP
Royosa-----------	0-3	Loamy fine sand	SM	A-2	0	100	100	75-90	25-35	---	NP
	3-60	Loamy sand, fine sand, sand.	SP-SM, SM	A-2, A-3	0	100	100	50-80	5-35	---	NP
455--------------- Datil	0-2	Sandy loam--------	SM	A-2, A-4	0	80-90	75-85	50-70	25-45	15-20	NP-5
	2-16	Gravelly clay loam, clay loam, sandy clay loam.	SM-SC, SC	A-4, A-6	0-5	70-80	65-75	50-60	35-50	25-35	5-15
	16-60	Loam, sandy clay loam.	SM-SC, CL-ML	A-4	0-5	95-100	90-100	70-85	40-55	25-30	5-10
459--------------- Pinon	0-2	Fine sandy loam	SM	A-2, A-4	0	80-90	75-85	65-75	30-40	20-25	NP-5
	2-18	Channery loam, gravelly clay loam, gravelly loam.	CL-ML, CL, GM-GC, SM-SC	A-4, A-6	0-10	60-80	55-75	50-60	45-55	25-30	5-15
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
460*: Lapdun-----------	0-9	Gravelly loam----	GM-SC, SM-SC	A-2, A-4	0-10	60-80	55-75	40-60	30-50	25-30	5-10
	9-60	Very gravelly clay loam, very gravelly loam, extremely gravelly clay loam.	GC	A-2	0-10	20-55	15-50	15-45	10-35	25-35	10-15
Datil------------	0-2	Gravelly loam----	GM, SM, GM-GC, SM-SC	A-2, A-4	0-5	60-80	55-75	30-60	20-40	15-25	NP-10
	2-13	Gravelly clay loam, clay loam, sandy clay loam.	SM-SC, SC	A-4, A-6	0-10	70-90	65-85	50-60	35-50	25-35	5-15
	13-60	Gravelly loam, gravelly sandy clay loam, sandy loam.	SM-SC	A-2, A-4	0-5	65-85	60-80	50-65	30-50	25-30	5-10
472*: Abrazo-----------	0-7	Gravelly sandy loam.	SM	A-1, A-2	5-10	65-80	60-75	40-55	20-35	20-25	NP-5
	7-27	Cobbly clay loam, cobbly sandy clay, clay.	CL	A-6, A-7	0-30	75-100	70-100	60-85	50-75	35-45	15-25
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
472*:											
Motoqua	0-2	Very gravelly loam.	GM-GC, GM	A-1, A-2	10-15	35-60	30-55	25-40	20-30	20-30	NP-10
	2-12	Very cobbly loam, very cobbly sandy clay loam.	GM-GC, GC	A-2, A-4, A-6	30-50	50-75	45-70	35-50	25-40	25-35	5-15
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
478*:											
Royosa	0-7	Sand	SP-SM, SM	A-1, A-2, A-3	0	100	100	45-65	5-15	---	NP
	7-60	Loamy sand, fine sand, sand.	SP-SM, SM	A-2, A-3	0	100	100	50-80	5-35	---	NP
Loarc	0-23	Loamy fine sand	SM	A-2	0	100	95-100	75-90	20-30	---	NP
	23-60	Sandy clay loam, sandy loam, gravelly sandy clay loam.	CL-ML, ML, SM, SM-SC	A-4	0	75-90	70-85	60-75	35-55	25-35	5-10
479 Augustine	0-3	Fine sandy loam	SM, SM-SC	A-4	0	80-95	75-90	55-75	35-50	20-25	NP-10
	3-37	Clay loam, loam	CL-ML, CL	A-4, A-6	0	80-95	75-90	70-85	50-65	25-40	5-15
	37-60	Loam, clay loam	CL-ML, CL	A-4, A-6	0	80-95	75-90	70-85	50-65	25-40	5-15
482*:											
Deama	0-2	Extremely gravelly sandy loam.	GP-GM, GM	A-1	15-30	20-35	15-30	10-25	5-20	20-25	NP-5
	2-12	Very gravelly loam, extremely cobbly loam, extremely gravelly loam.	GM, GM-GC	A-2, A-1	10-55	20-60	15-55	15-40	10-35	25-30	NP-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
484*:											
Mion	0-2	Gravelly sandy loam.	SM	A-1, A-2	0	65-80	60-75	35-50	20-30	20-25	NP-5
	2-16	Clay, silty clay, clay loam.	CL, CH	A-7	0	100	100	90-100	75-95	45-55	20-30
	16	Weathered bedrock	---	---	---	---	---	---	---	---	---
San Mateo	0-2	Sandy loam	SM	A-2, A-4	0	100	100	60-70	30-40	20-25	NP-5
	2-47	Loam, sandy clay loam.	SM-SC, SC, CL-ML, CL	A-4, A-6	0	85-100	75-90	60-75	45-65	25-35	5-15
	47-60	Stratified sandy loam to silty clay loam.	CL-ML, CL	A-4, A-6	0	85-100	75-90	60-75	50-65	25-35	5-15
Rock outcrop.											
491*. Riverwash											
510*:											
Guy	0-9	Sandy loam	SM	A-2, A-4	0	90-100	85-100	50-70	25-40	20-30	NP-5
	9-60	Gravelly sandy loam, cobbly sandy loam, cobbly loam.	SM	A-1, A-2, A-4	10-25	70-100	65-85	40-70	20-50	20-30	NP-5

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
510*:											
Dioxice---------	0-3	Loam-------------	CL-ML	A-4	0	95-100	85-95	70-80	50-65	20-25	5-10
	3-24	Sandy clay loam	CL-ML, CL, SC, SM-SC	A-4, A-6	0	95-100	85-95	65-80	45-60	20-35	5-15
	24-60	Cobbly loam, loam	CL-ML	A-4	10-15	85-95	80-90	60-75	50-65	20-30	5-10
Pena------------	0-11	Sandy loam-------	SM	A-4	0-5	85-100	80-95	55-70	35-50	20-25	NP-5
	11-60	Very cobbly sandy clay loam, very gravelly clay loam, very gravelly sandy loam.	GM-GC, SM-SC	A-2	15-40	50-70	40-60	30-50	20-30	25-30	5-10
530-------------- Loarc	0-14	Loamy sand-------	SM	A-2	0	100	95-100	60-70	20-30	---	NP
	14-23	Sandy clay loam, sandy loam, gravelly sandy clay loam.	SM, SM-SC	A-4	0	75-90	70-85	60-75	50-60	25-35	5-15
	23-36	Sandy loam, sandy clay loam.	SM, SM-SC	A-4	0	80-100	75-100	50-70	35-50	20-25	NP-10
	36-60	Gravelly sandy loam, gravelly loamy sand, gravelly sandy clay loam.	SM, SM-SC	A-2, A-4	0	65-80	60-75	45-60	30-40	20-25	NP-10
540-------------- Goldust	0-4	Gravelly sandy loam.	SM	A-4	0-10	75-85	60-70	40-55	35-45	20-25	NP-5
	4-22	Very cobbly loam	SM-SC	A-4	30-50	70-80	60-70	45-60	35-50	20-30	5-10
	22-35	Very gravelly clay.	GC	A-7, A-2	15-30	45-70	35-60	30-50	25-40	40-55	20-40
	35-60	Very gravelly sandy clay.	GC	A-2	0-15	50-65	30-45	25-40	20-35	40-55	20-40
549-------------- Ladron	0-2	Very gravelly sandy loam.	GP-GM, GM	A-1	0-25	40-55	35-50	25-35	5-20	20-25	NP-5
	2-31	Very gravelly loam.	GM-GC	A-2	10-25	40-60	35-55	30-40	20-35	25-30	5-10
	31-47	Very gravelly sandy loam, very gravelly loam.	GM	A-2, A-1	0-15	35-55	30-50	20-35	10-30	15-25	NP-5
	47-60	Very gravelly loam, very gravelly sandy loam.	GM-GC	A-2	0-10	35-55	30-50	25-35	10-30	25-30	5-10
555-------------- Datil	0-3	Gravelly loam----	GM, SM, GM-GC, SM-SC	A-1, A-2, A-4	0-5	60-80	55-75	40-60	30-40	15-25	NP-10
	3-15	Gravelly clay loam, clay loam, sandy clay loam.	SM-SC, SC	A-4, A-6	0-10	70-80	65-75	50-60	35-50	25-35	5-15
	15-60	Loam, sandy clay loam.	SM-SC, CL-ML	A-4	0-5	95-100	90-100	70-85	40-55	25-30	5-10
556*:											
Loarc-----------	0-3	Sandy loam-------	SM	A-4	0	100	95-100	75-90	35-50	20-25	NP-5
	3-32	Sandy clay loam, clay loam, gravelly sandy loam.	CL-ML, CL	A-4, A-6	0	75-90	70-85	60-75	35-55	25-35	5-15
	32-60	Sandy loam, sandy clay loam.	SM, SM-SC	A-4	0	80-100	75-100	50-70	35-50	20-25	NP-10

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
556*:											
Datil	0-7	Loam	CL-ML	A-4	0	80-90	75-85	65-80	50-65	25-30	5-10
	7-22	Gravelly clay loam, clay loam, sandy clay loam.	SM-SC, SC	A-4, A-6	0-5	70-80	65-80	50-60	35-50	25-35	5-15
	22-40	Loam, sandy clay loam.	SM-SC, CL-ML	A-4	0-5	95-100	90-100	70-85	40-55	25-30	5-10
	40-60	Gravelly loam, gravelly sandy clay loam, sandy loam.	SM-SC, GM-GC	A-2, A-4	0-5	65-85	60-80	50-65	30-50	25-30	5-10
Majada	0-7	Loam	CL-ML	A-4	0-10	90-100	85-100	70-85	55-65	20-30	5-10
	7-21	Very gravelly clay loam, very cobbly sandy clay loam.	GC	A-2	15-40	45-65	40-60	30-45	20-35	25-35	10-15
	21-60	Extremely cobbly sandy clay loam, very gravelly loam.	GP-GC, GM-GC	A-2	15-45	35-55	30-50	20-35	5-20	25-30	5-10
570*:											
La Fonda	0-3	Sandy loam	SM	A-4, A-2	0	100	100	60-70	30-40	20-25	NP-5
	3-60	Loam, clay loam, sandy clay loam.	CL	A-6	0	95-100	95-100	85-95	60-85	25-35	10-15
Torriorthents.											
Rock outcrop.											
575 Flaco	0-2	Stony loam	CL-ML	A-4	10-25	70-85	65-85	60-75	50-65	20-25	5-10
	2-24	Clay loam, gravelly clay loam, gravelly loam.	CL-ML	A-4	0-15	75-100	65-100	60-85	50-75	20-30	5-10
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
580 Landavaso	0-10	Sandy loam	SM	A-2, A-4	0	80-95	75-90	55-65	30-40	20-25	NP-5
	10-27	Gravelly sandy clay loam.	SC, SM-SC	A-2	0-10	65-80	60-75	40-55	25-35	25-35	5-15
	27-60	Very gravelly coarse sand, very gravelly loamy sand.	GP-GM, GM	A-1	0-10	35-55	30-50	20-35	5-15	---	NP
582*:											
Tanbark	0-1	Very fine sandy loam.	ML	A-4	0	100	100	90-100	70-80	20-25	NP-5
	1-18	Gypsiferous material.	---	---	---	---	---	---	---	---	---
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Winona	0-2	Very flaggy loam	GM-GC, SM-SC	A-2	30-50	50-80	40-70	35-50	25-35	25-30	5-10
	2-12	Very gravelly loam, very channery loam, very gravelly fine sandy loam.	GM-GC, SM-SC	A-2	15-30	40-65	35-60	25-35	10-35	25-30	5-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
585*: Rock outcrop.											
Travessilla-----	0-13	Gravelly fine sandy loam.	SM	A-2, A-4	0-10	60-80	55-75	45-65	5-20	20-25	NP-5
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
600*: Elbutte---------	0-6	Gravelly clay loam.	CL, GC, SC	A-6	0-5	70-80	65-75	60-70	45-55	25-35	10-20
	6-16	Very shaly silty clay loam, very shaly clay loam.	CL	A-6	0	90-95	85-90	75-85	65-75	35-40	15-20
	16	Weathered bedrock	---	---	---	---	---	---	---	---	---
Courthouse Variant--------	0-2	Very gravelly fine sandy loam.	GM	A-1	0-15	35-55	30-50	25-40	15-25	20-25	NP-5
	2-7	Very cobbly sandy clay loam, very cobbly loam.	GM-GC, GC	A-2, A-4, A-6	25-40	45-70	40-65	35-50	25-40	25-35	5-15
	7	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
601-------------- Oscura	0-9	Silty clay loam	CL	A-7	0	100	100	90-100	80-95	40-45	15-20
	9-60	Clay, silty clay, silty clay loam.	CL, CH	A-7	0	100	100	90-100	80-95	40-55	15-30
603*: Wink------------	0-2	Loamy sand-------	SM	A-2	0-5	90-100	90-100	80-90	15-35	15-20	NP-5
	2-60	Fine sandy loam, loam, sandy loam.	SM, SM-SC	A-2, A-4	0-5	90-100	90-100	80-100	25-50	20-25	NP-10
Dona Ana--------	0-3	Loamy sand-------	SM	A-2	0	95-100	90-100	60-80	15-35	---	NP
	3-16	Sandy clay loam, sandy loam, loam.	SC, SM-SC	A-6, A-4	0	95-100	90-100	80-90	35-50	25-35	5-15
	16-60	Sandy loam, sandy clay loam, fine sandy loam.	SM-SC	A-2, A-4	0	95-100	90-100	60-80	30-50	20-30	5-10
604-------------- Turney	0-3	Loamy sand-------	SM	A-1, A-2	0	95-100	90-100	45-65	15-35	---	NP
	3-60	Sandy clay loam, sandy loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	95-100	90-100	75-90	35-65	25-35	5-15
605-------------- Armijo	0-6	Clay-------------	CH, CL	A-7	0	100	100	95-100	90-100	45-60	20-30
	6-60	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	90-100	40-65	20-40
606-------------- Largo	0-3	Loam-------------	CL-ML	A-4	0	100	100	90-100	60-80	20-30	5-10
	3-60	Stratified silty clay loam to very fine sandy loam.	CL	A-6	0	100	100	95-100	75-95	30-40	10-20
610-------------- Belen	0-5	Clay-------------	CL, CH	A-7	0	80-95	75-90	70-85	65-80	40-65	20-45
	5-24	Silty clay, clay	CL, CH	A-7	0	80-95	75-90	70-85	65-80	40-65	20-45
	24-60	Stratified silt loam to very fine sand.	ML	A-4	0	80-95	75-90	60-75	50-65	20-25	NP-5

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
615*:											
Anthony----------	0-2	Fine sand--------	SM	A-2	0	95-100	90-100	80-90	15-30	---	NP
	2-26	Loamy very fine sand, very fine sandy loam.	SM	A-4	0	80-95	75-90	55-70	35-50	20-25	NP-5
	26-60	Very fine sand---	SM	A-4	0-5	85-95	80-90	65-80	35-45	---	NP
Gila------------	0-4	Fine sandy loam	ML	A-4	0	95-100	90-100	75-90	50-60	20-25	NP-5
	4-60	Stratified very fine sand to silty clay loam.	ML	A-4	0	95-100	90-100	70-85	50-75	20-25	NP-5
620-------------- Bluepoint	0-5	Loamy fine sand	SM	A-2, A-4	0	100	100	75-85	25-45	---	NP
	5-60	Loamy fine sand, loamy sand, fine sand.	SM	A-2, A-4	0	100	100	65-85	25-45	---	NP
621*:											
Arizo-----------	0-2	Gravelly sandy loam.	SM	A-1	0	75-85	60-70	30-50	10-20	---	NP
	2-60	Very gravelly coarse sand, very gravelly loamy coarse sand.	GP-GM, GP	A-1	0	30-55	25-50	10-20	0-10	---	NP
Riverwash.											
625-------------- Berino	0-9	Sandy loam-------	SM	A-2, A-4	0	95-100	95-100	60-95	30-50	15-20	NP-5
	9-60	Sandy clay loam, sandy loam, loam.	SC, SM-SC, CL, CL-ML	A-6, A-4	0	95-100	95-100	65-80	35-60	20-35	5-15
627*:											
Berino----------	0-10	Fine sand--------	SM	A-2	0	95-100	95-100	75-90	10-35	---	NP
	10-31	Sandy clay loam, sandy loam, loam.	SC, SM-SC, CL, CL-ML	A-6, A-4	0	95-100	95-100	65-80	35-60	20-35	5-15
	31-60	Sandy clay loam, sandy loam.	SC, SM-SC, CL, CL-ML	A-6, A-4	0	95-100	95-100	65-80	35-55	20-35	5-15
Dona Ana--------	0-6	Sandy loam-------	SM	A-2, A-4	0	95-100	90-100	60-85	30-50	15-25	NP-5
	6-45	Sandy clay loam, sandy loam, loam.	SC, SM-SC	A-6, A-4	0	95-100	90-100	80-90	35-50	25-35	5-15
	45-60	Sandy loam, sandy clay loam, fine sandy loam.	SM-SC	A-2, A-4	0	95-100	90-100	60-80	30-50	20-30	5-10
634*:											
Lozier----------	0-3	Very flaggy loam	GC, CL, GM-GC, CL-ML	A-2, A-4	25-45	50-70	45-65	25-60	20-55	25-30	5-15
	3-16	Very flaggy loam, very flaggy clay loam.	GC, CL, GM-GC, CL-ML	A-2, A-4, A-6	25-45	50-70	45-65	25-60	20-55	25-35	5-15
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
635*:											
Wink------------	0-2	Fine sand--------	SM, SP-SM	A-2, A-3	0-5	90-100	90-100	75-90	5-15	---	NP
	2-60	Fine sandy loam, loam, sandy loam.	SM-SC	A-2, A-4	0-5	90-100	90-100	80-100	25-50	20-25	5-10
Pajarito--------	0-2	Loamy fine sand	SM	A-2	0	100	100	85-100	25-35	---	NP
	2-60	Fine sandy loam, sandy loam.	SM	A-2, A-4	0	90-100	85-100	60-100	25-45	15-20	NP-5
636*:											
Campana---------	0-3	Loamy fine sand	SM	A-2, A-4	0	80-100	75-100	65-85	20-40	15-20	NP-5
	3-32	Sandy clay loam, loam.	CL-ML, CL	A-4, A-6	0	80-100	75-100	55-75	50-65	25-30	5-15
	32-60	Gypsiferous material.	---	---	---	---	---	---	---	---	---
Yesum-----------	0-1	Loamy very fine sand.	SM	A-4	0	100	95-100	60-75	40-50	---	NP
	1-60	Gypsiferous material.	---	---	---	---	---	---	---	---	---
638-------------- Nickel Variant	0-2	Very gravelly sandy loam.	GM	A-1	0-10	35-55	30-50	20-40	10-25	20-25	NP-5
	2-6	Very gravelly loam.	GM	A-1, A-2	0-10	35-55	30-50	25-40	15-35	20-25	NP-5
	6-30	Very gravelly coarse sandy loam.	GM	A-1	0-10	35-55	30-50	20-35	10-20	---	NP
	30-60	Extremely gravelly coarse sand.	GP, GP-GM	A-1	10-15	15-35	10-30	5-20	0-10	---	NP
641-------------- Turney	0-4	Loam-------------	CL-ML, SM-SC	A-4	0	95-100	90-100	75-90	35-65	25-30	5-10
	4-60	Sandy clay loam, loam, clay loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	95-100	90-100	75-90	35-65	25-35	5-15
645*:											
Yesum, overblown	0-8	Fine sand--------	SP-SM, SM	A-3, A-2	0	100	95-100	75-95	5-15	---	NP
	8-60	Gypsiferous material.	---	---	---	---	---	---	---	---	---
Yesum-----------	0-1	Loamy very fine sand.	SM	A-4	0	100	95-100	60-75	40-50	---	NP
	1-60	Gypsiferous material.	---	---	---	---	---	---	---	---	---
646-------------- Yesum	0-1	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	50-65	20-25	NP-5
	1-60	Gypsiferous material.	---	---	---	---	---	---	---	---	---
648*:											
Armijo----------	0-3	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	25-40	15-25
	3-60	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	90-100	40-65	20-40
Glendale--------	0-12	Clay loam--------	CL	A-6	0	95-100	85-100	80-90	75-85	30-35	10-15
	12-60	Clay loam, silty clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	85-100	85-100	85-100	80-90	25-35	5-15

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
648*:											
Bluepoint-------	0-8	Loamy sand-------	SM	A-2	0	90-100	90-100	75-85	20-35	---	NP
	8-60	Stratified loamy sand to gravelly coarse sand.	SM	A-2	0	75-100	70-100	70-80	15-25	---	NP
649*:											
Nickel----------	0-8	Very gravelly sandy loam.	GM	A-1, A-2	0-10	35-55	30-50	15-45	20-25	---	NP-5
	8-60	Very gravelly sandy loam, extremely gravelly sandy loam, extremely gravelly loam.	GP-GM, GM	A-1	0-10	30-60	20-50	15-35	5-25	---	NP
Caliza----------	0-17	Very gravelly sandy loam.	GM	A-1	0	30-50	25-45	20-35	10-20	20-25	NP-5
	17-60	Stratified very gravelly coarse sandy loam to extremely gravelly loamy coarse sand.	GP, GP-GM	A-1	0	25-50	20-40	10-30	0-10	---	NP
650*:											
Typic Camborthids.											
Nolam-----------	0-2	Very channery sandy loam.	GM	A-1, A-2	0	35-50	35-50	25-40	15-30	20-25	NP-5
	2-26	Very gravelly sandy clay loam, very gravelly sandy loam, very gravelly loam.	GM-GC, GC	A-2	0	35-50	35-50	25-45	10-25	25-35	5-15
	26-60	Extremely gravelly loamy sand, extremely gravelly loamy coarse sand.	GP, GP-GM	A-1	0	15-30	10-25	5-20	0-10	---	NP
651------------- Barana	0-3	Loam------------	CL-ML	A-4	0	100	90-100	85-95	50-70	25-30	5-10
	3-23	Clay loam, silty clay loam, loam.	CL	A-6	0	100	100	90-100	80-90	25-35	10-15
	23-60	Clay loam, sandy clay loam, loam.	CL	A-6	0	80-95	75-90	65-80	55-65	25-35	10-15
653------------- Bucklebar	0-4	Sandy clay loam	SM-SC, SC, CL-ML, CL	A-4, A-6	0-5	90-100	90-100	60-85	40-60	25-35	5-15
	4-24	Sandy clay loam, clay loam.	SM-SC, SC, CL-ML, CL	A-6, A-4	0-5	90-100	90-100	60-85	40-60	25-35	5-15
	24-33	Loam------------	ML, CL-ML	A-4	0-5	95-100	95-100	80-100	60-80	25-35	5-10
	33-60	Silty clay loam, loam.	CL-ML, CL	A-4, A-6	0-5	95-100	95-100	85-100	60-90	25-35	5-15
655------------- Nolam	0-2	Gravelly sandy loam.	SM	A-2, A-4	0-5	70-90	60-75	40-65	25-40	20-25	NP-5
	2-13	Very gravelly sandy clay loam, very gravelly sandy loam, very gravelly loam.	GM-GC, GC	A-2	0	35-50	35-50	25-45	10-25	25-35	5-15
	13-60	Very gravelly sandy loam.	GM	A-1	0	35-50	35-50	20-35	10-20	20-25	NP-5

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
656*:											
Aftaden---------	0-2	Loamy fine sand	SM	A-2	0-10	90-100	85-100	65-80	20-35	---	NP
	2-11	Fine sandy loam, sandy loam, gravelly sandy loam.	SM	A-2, A-4	0-10	65-85	60-90	45-60	30-40	20-25	NP-5
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Akela-----------	0-2	Gravelly loamy fine sand.	SM	A-2	10-15	65-90	60-85	50-70	15-30	---	NP
	2-12	Very gravelly fine sandy loam, extremely cobbly loam.	SM, GM	A-2, A-1	10-40	40-70	30-45	20-45	10-35	15-20	NP-5
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Lava flows.											
657*:											
Akela-----------	0-3	Very gravelly loam.	SM, GM	A-2, A-1	15-25	40-70	35-50	20-45	20-35	15-20	NP-5
	3-12	Very gravelly loam, very gravelly sandy loam, extremely cobbly loam.	SM, GM	A-2, A-1	10-25	40-70	30-45	20-45	10-35	15-20	NP-5
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Lava flows.											
Armendaris------	0-2	Silt loam--------	CL-ML	A-4	0	100	95-100	80-90	75-90	20-25	5-10
	2-5	Silty clay loam, clay loam.	CL	A-6	0	100	95-100	90-95	80-90	25-30	10-15
	5-35	Silty clay, silty clay loam.	CL	A-6, A-7	0	100	95-100	90-95	80-90	30-45	15-25
	35-60	Silty clay loam, silt loam, loam.	CL-ML, CL	A-6, A-4	0	100	95-100	80-95	80-90	25-35	5-15
660*. Dune land											
689*:											
Laborcita-------	0-2	Very stony sandy loam.	GM	A-1, A-2	10-25	45-60	40-55	30-45	20-35	20-25	NP-5
	2-7	Very gravelly sandy loam.	GM	A-1	0-10	40-55	35-50	25-40	15-25	20-25	NP-5
	7-60	Gravelly loam----	CL-ML	A-4	0-15	65-80	60-75	55-65	50-60	25-30	5-10
Pilabo----------	0-3	Very stony loam	SM-SC, GM-GC	A-4	40-55	55-85	50-80	40-55	35-50	25-30	5-10
	3-35	Very cobbly loam	SM-SC, GM-GC	A-4	30-55	55-75	50-70	40-50	35-45	25-30	5-10
	35-60	Very gravelly loam.	GM-GC	A-2	10-25	45-60	40-55	30-45	25-35	25-30	5-10
Lemitar---------	0-2	Very cobbly sandy loam.	GM, SM	A-1, A-2	25-45	50-70	45-65	35-50	20-35	20-25	NP-5
	2-12	Very cobbly loam, very cobbly clay loam.	GM-GC	A-4	25-40	50-70	45-65	40-55	35-45	25-30	5-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
690*:											
Bluepoint-------	0-4	Very gravelly loamy sand.	GP-GM, SP-SM	A-1	0-10	40-60	30-50	15-30	5-10	---	NP
	4-60	Loamy fine sand, fine sand, loamy sand.	SM	A-2	0	90-100	90-100	70-80	15-25	---	NP
Caliza----------	0-4	Very gravelly loamy coarse sand.	GP-GM, GM	A-1	0	30-50	25-45	15-30	5-15	---	NP
	4-60	Stratified very gravelly coarse sand to extremely gravelly loamy coarse sand.	GP, GP-GM	A-1	0	25-50	20-40	10-30	0-10	---	NP
695-------------- Deltajo	0-2	Very channery loam.	GM-GC	A-2, A-4	10-15	45-60	40-55	30-50	25-45	20-25	5-10
	2-13	Channery loam----	GM-GC, SM-SC, CL-ML	A-4	0-10	60-80	55-75	45-60	40-55	20-25	5-10
	13-22	Channery silt loam, channery loam.	GM-GC, CL-ML	A-4	0-10	65-80	60-75	50-65	45-60	20-25	5-10
	22-33	Weathered bedrock	---	---	---	---	---	---	---	---	---
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
696*: Lithic Torriorthents.											
Lozier----------	0-2	Very flaggy fine sandy loam.	GM, SM	A-2	30-45	50-75	45-70	35-50	25-35	20-25	NP-4
	2-12	Very flaggy loam, very flaggy clay loam.	GC, CL	A-2	30-45	50-75	45-70	25-65	25-55	25-35	10-15
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
705*:											
Socorro---------	0-3	Very gravelly fine sandy loam.	GM, SM	A-1	15-30	40-65	35-60	30-35	15-25	15-25	NP-5
	3-25	Very cobbly loam, very gravelly loam, very gravelly silt loam.	GM-GC	A-2	15-40	45-65	40-60	30-50	20-30	25-30	5-10
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Flaco-----------	0-1	Fine sandy loam	SM	A-4	0	80-100	75-100	55-70	35-50	20-25	NP-5
	1-8	Loam, clay loam	CL-ML, CL	A-4, A-6	0-15	100	100	75-85	60-75	25-35	5-15
	8-22	Loam, clay loam, gravelly clay loam.	CL-ML	A-4	0-15	75-100	65-100	60-85	50-75	20-30	5-10
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
709*:											
Penistaja-------	0-4	Fine sandy loam	ML, SM	A-4	0	100	100	90-100	40-60	20-25	NP-5
	4-37	Sandy clay loam, clay loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	100	100	95-100	45-75	25-35	5-15
	37-60	Sandy loam, fine sandy loam, gravelly sandy loam.	SM-SC, CL-ML	A-2, A-4	0	70-100	100	70-95	30-55	20-30	NP-10
Clovis----------	0-4	Fine sandy loam	SM, ML	A-4	0	100	100	70-90	40-60	20-25	NP-5
	4-60	Sandy clay loam, clay loam, loam.	CL, CL-ML	A-6, A-4	0	100	100	90-100	50-85	25-35	5-15
716*:											
Creel-----------	0-3	Channery loam----	GM-GC, CL-ML	A-4	0-10	60-80	55-75	50-70	40-60	25-30	5-10
	3-23	Channery loam, channery sandy clay loam, channery fine sandy loam.	GM-GC, SM-SC	A-4	0-10	60-80	55-75	45-65	35-50	25-30	5-10
	23	Weathered bedrock	---	---	---	---	---	---	---	---	---
Musofare--------	0-2	Channery loam----	SM, GM	A-4	0-10	60-80	55-75	40-55	35-50	20-25	NP-5
	2-14	Very channery loam, very channery clay loam.	GC, SC	A-2	10-15	50-75	30-55	30-50	25-35	25-35	10-15
	14-26	Channery loam----	SM	A-4	0-10	70-85	55-75	40-55	35-50	20-25	NP-5
	26-31	Weathered bedrock	---	---	---	---	---	---	---	---	---
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Clovis----------	0-2	Fine sandy loam	SM, ML	A-4	0	100	100	70-90	40-60	20-25	NP-5
	2-41	Sandy clay loam, clay loam, loam.	CL, CL-ML	A-6, A-4	0	100	100	90-100	50-85	25-35	5-15
	41-60	Very fine sandy loam, fine sandy loam, loam.	ML	A-4	0	100	100	90-100	50-75	20-25	NP-5
717*:											
Penistaja-------	0-11	Fine sand--------	SM	A-2	0	100	100	85-95	25-35	---	NP
	11-25	Sandy clay loam, clay loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	100	100	95-100	45-75	25-35	5-15
	25-60	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0	100	100	70-95	30-55	20-30	NP-10
Clovis----------	0-12	Fine sand--------	SM	A-2	0	100	100	75-85	15-30	---	NP
	12-60	Sandy clay loam, clay loam, loam.	CL, CL-ML	A-6, A-4	0	100	100	90-100	50-85	25-35	5-15
718*:											
Palma, thick surface--	0-23	Fine sand--------	SM	A-2	0	100	100	60-80	15-20	---	NP
	23-60	Fine sandy loam, sandy loam.	SM	A-4	0	100	100	65-85	35-45	15-25	NP-5
Penistaja-------	0-2	Fine sandy loam	ML, SM	A-4	0	100	100	90-100	40-60	20-25	NP-5
	2-22	Sandy clay loam, clay loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	100	100	95-100	45-75	25-35	5-15
	22-60	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0	100	100	70-95	30-55	20-30	NP-10

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
718*:											
Palma-----------	0-3	Loamy fine sand	SM	A-2	0	100	100	75-90	15-20	---	NP
	3-32	Fine sandy loam, sandy loam.	SM	A-4	0	100	100	65-85	35-45	15-25	NP-5
	32-60	Loamy fine sand, fine sandy loam, sandy loam.	SM	A-2, A-4	0	100	100	65-85	30-45	15-20	NP-5
724-------------- Gabaldon	0-2	Silt loam--------	CL-ML	A-4	0	100	95-100	80-95	60-80	20-30	5-10
	2-60	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-4, A-6	0	100	95-100	95-100	80-90	25-35	5-15
735*:											
Netoma----------	0-2	Loam-------------	ML	A-4	0	90-100	85-100	70-85	55-65	20-25	NP-5
	2-60	Gypsiferous material.	---	---	---	---	---	---	---	---	---
Claunch---------	0-2	Fine sandy loam	SM	A-4	0	100	95-100	70-80	40-50	20-25	NP-5
	2-28	Loam-------------	CL-ML	A-4	0	100	95-100	75-85	60-70	25-30	5-10
	28-36	Gypsiferous material.	---	---	---	---	---	---	---	---	---
	36-60	Loam, sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	90-100	85-100	70-85	45-55	20-30	NP-10
736*:											
Winona----------	0-1	Very channery loam.	GM-GC	A-2	15-30	40-65	35-60	30-50	20-35	25-30	5-10
	1-11	Very gravelly loam, very channery loam, very gravelly fine sandy loam.	GM-GC, SM-SC	A-2	15-30	40-65	35-60	25-35	10-25	25-30	5-10
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Tanbark---------	0-2	Fine sandy loam	SM	A-4	0	100	100	70-85	40-50	20-25	NP-5
	2-16	Gypsiferous material.	---	---	---	---	---	---	---	---	---
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
La Fonda--------	0-2	Loam-------------	CL-ML	A-4	0	100	100	85-95	60-75	25-30	5-10
	2-60	Loam, clay loam, sandy clay loam.	CL	A-6	0	95-100	95-100	85-95	60-85	25-35	10-15
737*:											
Harvey----------	0-2	Fine sandy loam	SM, ML	A-4, A-2	0	80-100	80-100	60-90	30-60	20-30	NP-5
	2-60	Clay loam, sandy clay loam, loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	80-100	80-100	70-100	45-80	25-35	5-15
La Fonda--------	0-7	Fine sandy loam	SM, ML	A-4	0	100	100	70-85	40-55	20-25	NP-5
	7-60	Loam, clay loam, sandy clay loam.	CL	A-6	0	95-100	95-100	85-95	60-85	25-35	10-15
738*:											
Harvey----------	0-4	Very fine sandy loam.	ML	A-4	0	80-100	80-100	70-100	50-80	20-25	NP-5
	4-60	Clay loam, sandy clay loam, loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	80-100	80-100	70-100	45-80	25-35	5-15

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
738*:											
Dean	0-4	Gravelly fine sandy loam.	SM, GM	A-4	0-10	65-85	55-75	45-60	35-50	20-25	NP-5
	4-58	Gravelly loam, gravelly sandy clay loam, gravelly clay loam.	SM-SC, CL-ML, CL, SC	A-2, A-4, A-6	0-10	65-85	55-75	40-65	30-55	25-35	5-15
	58-60	Sandy clay loam	SM-SC, CL-ML	A-4	0	85-95	75-90	60-75	40-55	25-35	5-10
749*:											
Ildecarb	0-16	Gravelly loam	CL-ML	A-4	0-10	65-80	60-75	55-65	50-60	25-30	5-10
	16-48	Very gravelly sandy loam, extremely gravelly loam, very gravelly sandy clay loam.	GC, GM-GC	A-2	10-30	30-60	25-55	20-45	10-35	25-35	5-15
	48-60	Extremely gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC, GM-GC	A-2	10-30	30-55	25-50	20-40	10-30	25-35	5-15
Dean	0-10	Gravelly loam	SM-SC, GM-GC, CL-ML	A-4	0-10	65-85	55-75	45-65	40-55	20-25	5-10
	10-50	Gravelly loam, gravelly sandy clay loam.	SM-SC, SC	A-2, A-4, A-6	0-10	65-85	55-75	40-55	30-50	25-35	5-15
	50-60	Sandy clay loam	SM-SC, CL-ML	A-4	0	85-95	75-90	60-75	40-55	25-35	5-10
760*:											
Sedillo	0-3	Gravelly fine sandy loam.	GM-GC, SM-SC	A-4	10-15	65-80	60-75	50-60	40-50	25-30	5-10
	3-60	Very gravelly clay loam, very gravelly sandy clay loam.	GM-GC, GC	A-2	15-30	40-65	35-60	30-40	20-30	25-35	5-15
Clovis	0-2	Sandy loam	SM, ML	A-4	0	100	100	70-90	40-60	20-25	NP-5
	2-25	Sandy clay loam, clay loam, loam.	CL, CL-ML	A-6, A-4	0	100	100	90-100	50-85	25-35	5-15
	25-60	Gravelly sandy clay loam.	SC, GC	A-4, A-6	0	55-80	50-75	40-55	35-50	25-35	10-15
765*:											
Puertecito	0-2	Very stony loam	GM	A-4	25-45	50-70	45-65	40-60	35-50	20-25	NP-5
	2-14	Very channery clay loam, very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	10-25	40-60	35-55	35-50	30-45	25-35	5-15
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
783---------------- Ponciano	0-3	Very bouldery clay loam.	CL	A-6	30-50	60-75	55-70	50-65	50-60	25-35	10-20
	3-35	Channery silty clay loam, channery silty clay.	CL	A-6	10-25	70-90	65-85	60-80	55-70	30-40	15-25
	35-60	Silty clay loam, silty clay.	CL	A-6	0	80-100	75-100	70-85	65-80	30-40	15-25
785*: Torriorthents.											
Rock outcrop.											
786*: Rock outcrop.											
Badland.											
788*: Penistaja--------	0-6	Fine sandy loam	ML, SM	A-4	0	100	100	90-100	40-60	20-25	NP-5
	6-60	Sandy clay loam, clay loam, loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	100	100	95-100	45-75	25-35	5-15
Palma-------------	0-6	Loamy fine sand	SM	A-2	0	100	100	60-80	15-20	---	NP
	6-60	Loamy fine sand, fine sandy loam, sandy loam.	SM	A-2, A-4	0	100	100	65-85	30-45	15-20	NP-5
800*: Haploborolls.											
Rock outcrop.											
801*: Calabasas, 2 to 4 percent slopes----------	0-6	Clay loam--------	CL	A-6	0	100	100	85-95	70-85	30-35	10-15
	6-60	Loam, clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	100	100	85-95	80-90	25-35	5-15
Calabasas, 0 to 2 percent slopes----------	0-5	Clay loam--------	CL	A-6	0	100	100	85-90	70-85	30-35	10-15
	5-60	Loam, clay loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	85-95	80-90	25-35	5-15
805*: Tanbark----------	0-1	Silt loam--------	ML, CL-ML	A-4	0	100	100	90-100	70-90	25-35	5-10
	1-16	Gypsiferous material.	---	---	---	---	---	---	---	---	---
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rayohill---------	0-1	Loam-------------	ML, CL-ML	A-4	0	90-100	85-100	65-80	50-65	20-30	NP-10
	1-26	Gypsiferous material.	---	---	---	---	---	---	---	---	---
	26	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
812 Socorro	0-3	Very gravelly loam.	GM-GC	A-2, A-4	15-30	50-75	45-70	35-45	25-40	25-30	5-10
	3-10	Very cobbly loam, very gravelly loam, very gravelly silt loam.	GM-GC	A-2	15-40	45-65	40-60	30-50	20-30	25-30	5-10
	10-28	Extremely stony loam, very gravelly clay loam, very cobbly loam.	SM-SC, GM-GC	A-2	15-55	20-65	15-60	10-25	10-20	25-30	5-10
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
814*: Puice	0-6	Channery loam	GM, SM	A-4	0-10	60-80	55-75	50-60	40-50	20-25	NP-5
	6-28	Very channery loam, extremely channery loam, extremely channery sandy loam.	GM-GC, GM	A-2, A-1	15-25	25-65	20-60	15-40	10-30	20-30	NP-10
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Tanbark	0-2	Silt loam	ML, CL-ML	A-4	0	100	100	90-100	70-90	25-35	5-10
	2-13	Gypsiferous material.	---	---	---	---	---	---	---	---	---
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Harvey	0-3	Loam	CL-ML, ML	A-4	0	80-100	80-100	70-100	50-80	25-35	5-10
	3-60	Clay loam, sandy clay loam, loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	80-100	80-100	70-100	45-80	25-35	5-15
816*: Pirodel	0-3	Fine sand	SM	A-2	0	90-100	85-100	75-90	10-20	---	NP
	3-30	Fine sand, loamy fine sand, loamy sand.	SM	A-2	0	90-100	85-100	75-90	15-25	---	NP
	30-60	Sandy loam, gravelly sandy loam, gravelly sandy clay loam.	SM	A-2, A-4	0	60-90	55-85	40-60	25-50	20-25	NP-5
Harvey	0-12	Fine sandy loam	SM, ML	A-4, A-2	0	80-100	80-100	60-90	30-60	20-30	NP-5
	12-31	Clay loam, sandy clay loam, loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	80-100	80-100	70-100	45-80	25-35	5-15
	31-60	Gravelly sandy loam, gravelly sandy clay loam, fine sandy loam.	SM, SM-SC	A-1, A-2	0-10	60-90	55-85	35-65	20-35	20-30	NP-10
Pinon	0-3	Channery fine sandy loam.	GM, SM	A-2	0-10	60-80	55-75	40-60	25-35	20-25	NP-5
	3-18	Channery loam, gravelly clay loam.	CL-ML, GC, GM-GC, SM-SC	A-4, A-6	0-10	60-80	55-75	50-60	45-55	25-30	5-15
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
818 Mespun	0-11	Fine sand	SM	A-2	0	100	100	75-95	20-35	---	NP
	11-60	Fine sand, loamy fine sand, loamy sand.	SM	A-2	0	100	100	70-95	15-35	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
822----------------- Pirodel	0-2	Fine sand--------	SM	A-2	0	90-100	85-100	75-90	10-20	---	NP
	2-29	Fine sand, loamy fine sand, loamy sand.	SM	A-2	0	90-100	85-100	75-90	15-25	---	NP
	29-60	Sandy loam, gravelly sandy loam, gravelly loam.	GM, SM	A-2, A-4	0	60-90	55-85	40-60	25-50	20-25	NP-5
824----------------- Pinon	0-2	Very channery fine sandy loam.	GM-GC	A-2	0-10	35-55	30-55	25-40	10-20	20-25	5-10
	2-17	Channery loam, gravelly clay loam.	CL-ML, GC, GM-GC, SM-SC	A-4, A-6	0-10	60-80	55-75	50-60	45-55	25-30	5-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
826*:											
Harvey-----------	0-2	Fine sandy loam	SM, ML	A-4, A-2	0	80-100	80-100	60-90	30-60	20-30	NP-5
	2-60	Clay loam, sandy clay loam, loam.	CL-ML, CL, SC, SM-SC	A-4, A-6	0	80-100	80-100	70-100	45-80	25-35	5-15
Ildecarb---------	0-13	Channery loam----	CL-ML	A-4	0-10	65-80	60-75	55-65	50-60	25-30	5-10
	13-60	Very gravelly sandy loam, extremely channery loam, very channery loam.	GM-GC	A-2	10-30	30-60	25-55	20-45	10-35	25-30	5-10
Pinon------------	0-3	Channery sandy loam.	SM-SC, GM-GC	A-4	0-10	60-80	55-75	45-65	35-50	20-25	5-10
	3-16	Channery loam, channery sandy loam.	CL-ML, GM-GC, SM-SC	A-4	0-10	60-80	55-75	50-60	45-55	25-30	5-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
828*:											
Cuate------------	0-1	Very channery loam.	GM-GC	A-2	10-15	45-60	35-55	35-45	25-35	25-30	5-10
	1-32	Very channery loam, very flaggy loam, very channery sandy loam.	GM-GC	A-2, A-4	15-40	50-65	40-60	30-55	15-40	25-30	5-10
	32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Tanbark----------	0-6	Silt loam--------	ML, CL-ML	A-4	0	100	100	90-100	70-90	25-35	5-10
	6-15	Gypsiferous material.	---	---	---	---	---	---	---	---	---
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
830*:											
Cuate------------	0-8	Very channery loam.	GM-GC	A-2	10-15	45-60	35-55	35-45	25-35	25-30	5-10
	8-33	Very gravelly loam, very flaggy loam, very gravelly sandy loam.	GM-GC	A-2, A-4	15-40	50-65	40-60	30-55	15-40	25-30	5-10
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
830*:											
Deama	0-18	Very channery loam.	GM-GC	A-2	5-15	50-60	40-50	35-45	25-35	25-30	5-10
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Tanbark	0-2	Channery loam	CL-ML, GM-GC, GM, ML	A-4	0	55-80	50-75	45-65	40-60	25-35	5-10
	2-12	Gypsiferous material.	---	---	---	---	---	---	---	---	---
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
832 Jornaham	0-2	Cobbly fine sandy loam.	SM	A-2, A-4	15-25	70-95	65-90	45-60	30-40	20-25	NP-5
	2-9	Cobbly sandy loam	SM	A-2	15-30	75-95	70-90	55-70	25-35	20-25	NP-5
	9-34	Gravelly loam, gravelly fine sandy loam.	GM, SM	A-4, A-2	5-15	65-80	60-75	50-65	30-50	20-25	NP-5
	34-60	Gypsiferous material.	---	---	---	---	---	---	---	---	---
834*:											
San Mateo	0-2	Loam	CL-ML	A-4	0	100	100	80-95	60-75	25-30	5-10
	2-36	Loam, sandy clay loam, clay loam.	SM-SC, SC, CL-ML, CL	A-4, A-6	0	85-100	75-90	60-75	45-65	25-35	5-15
	36-60	Stratified sandy loam to clay loam.	CL-ML, CL	A-4, A-6	0	85-100	75-90	60-75	50-65	25-35	5-15
Glenberg	0-3	Fine sandy loam	SM, SM-SC	A-4, A-2	0	95-100	85-100	60-80	30-45	20-30	NP-10
	3-60	Stratified loamy sand to loam.	SM	A-2, A-4	0	90-100	75-100	50-70	25-40	20-25	NP-5
836*:											
Rayohill	0-1	Fine sandy loam	SM	A-2, A-4	0	90-100	85-100	65-75	30-40	15-20	NP-5
	1-33	Gypsiferous material.	---	---	---	---	---	---	---	---	---
	33	Weathered bedrock	---	---	---	---	---	---	---	---	---
Clovis	0-2	Fine sandy loam	SM, ML	A-4	0	100	100	70-90	40-60	20-25	NP-5
	2-29	Sandy clay loam, clay loam, loam.	CL, CL-ML	A-6, A-4	0	100	100	90-100	50-85	25-35	5-15
	29-60	Very fine sandy loam, sandy loam, loam.	ML	A-4	0	100	100	85-100	50-75	20-25	NP-5
838*:											
Tanbark	0-2	Fine sandy loam	SM	A-4	0	100	100	70-85	40-50	20-25	NP-5
	2-14	Gypsiferous material.	---	---	---	---	---	---	---	---	---
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
840*:											
Deama	0-1	Very stony loam	GM, SM, GM-GC, CL-ML	A-2	35-50	60-80	55-75	50-70	40-60	20-30	NP-10
	1-19	Very flaggy loam, very cobbly loam, very stony silt loam.	GM, ML, GM-GC, CL-ML	A-4	35-50	60-80	55-75	50-70	40-65	20-30	NP-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
845*:											
Winona	0-2	Very flaggy loam	GM-GC, SM-SC	A-2	30-50	50-80	40-70	35-50	25-35	25-30	5-10
	2-11	Very cobbly loam, very flaggy loam, very cobbly sandy loam.	GM-GC, SM-SC	A-2, A-4	30-50	50-80	45-75	40-55	20-45	25-30	5-10
	11-15	Very gravelly loam, very channery loam, very gravelly fine sandy loam.	GM-GC, SM-SC	A-2	15-30	40-65	35-60	25-35	10-35	25-30	5-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
850*:											
Creel	0-2	Very channery loam.	GM-GC	A-2	10-15	35-60	30-55	25-50	15-35	25-30	5-10
	2-23	Channery loam, channery sandy clay loam, channery fine sandy loam.	GM-GC, SM-SC	A-4	0-10	60-80	55-75	45-65	35-50	25-30	5-10
	23	Weathered bedrock	---	---	---	---	---	---	---	---	---
Ponciano	0-2	Very stony silty clay loam.	CL, GC	A-6	25-45	50-70	45-65	45-60	45-60	25-35	10-20
	2-42	Channery silty clay loam, channery silty clay.	CL	A-6	10-15	70-90	60-85	60-80	55-70	30-40	15-25
	42-60	Silty clay loam, silty clay.	CL	A-6	0	80-100	75-100	70-85	65-80	30-40	15-25

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
11--------------- Armijo	0-10	40-50	0.06-0.2	0.07-0.09	7.9-8.4	8-16	High------	0.20	5	4	.7-.9
	10-44	40-50	<0.06	0.07-0.09	7.9-8.4	8-16	High------	0.20			
	44-60	30-35	0.6-2.0	0.07-0.09	>8.4	8-16	Moderate	0.32			
14--------------- Saneli	0-29	40-65	<0.06	0.09-0.11	7.9-8.4	2-8	High------	0.20	5	4	.5-1
	29-60	6-12	6.0-20	0.03-0.08	7.4-8.4	2-8	Very low	0.17			
22--------------- Glendale	0-19	28-35	0.2-0.6	0.13-0.15	7.4-8.4	4-8	Moderate	0.32	5	4L	.5-1
	19-60	18-35	0.2-0.6	0.14-0.16	7.4-8.4	4-8	Moderate	0.37			
26--------------- Popotosa	0-11	28-35	0.2-0.6	0.13-0.15	7.9-8.4	4-8	Moderate	0.32	5	4L	.7-.9
	11-29	18-35	0.2-0.6	0.12-0.14	7.4-9.0	4-8	Moderate	0.37			
	29-60	0-5	6.0-20	0.06-0.08	6.6-7.8	2-4	Low-------	0.17			
32--------------- Gila	0-14	28-34	0.2-0.6	0.14-0.16	7.9-8.4	4-8	Moderate	0.32	5	4L	.5-1
	14-24	10-18	0.6-2.0	0.12-0.14	7.9-8.4	4-8	Low-------	0.49			
	24-60	10-18	0.6-2.0	0.13-0.15	7.4-8.4	4-8	Low-------	0.43			
37--------------- Agua	0-8	28-34	0.2-0.6	0.13-0.15	8.5-9.0	4-8	Moderate	0.32	5	4L	.5-1
	8-18	10-18	0.6-2.0	0.13-0.15	8.5-9.0	4-8	Low-------	0.43			
	18-23	10-18	2.0-6.0	0.11-0.13	8.5-9.0	4-8	Low-------	0.28			
	23-60	5-10	6.0-20	0.05-0.07	7.4-8.4	4-8	Low-------	0.17			
44--------------- Anthony	0-12	5-15	2.0-6.0	0.10-0.12	7.9-9.0	4-8	Low-------	0.24	5	3	.5-1
	12-60	8-15	2.0-6.0	0.10-0.13	7.9-9.0	4-8	Low-------	0.32			
48--------------- Anthony Variant	0-10	20-30	0.2-0.6	0.07-0.09	7.4-7.8	8-16	Low-------	0.32	5	4L	.8-1
	10-25	10-15	2.0-6.0	0.05-0.07	7.9-8.4	8-16	Low-------	0.49			
	25-37	35-50	0.06-0.2	0.09-0.11	7.9-8.4	8-16	High------	0.28			
	37-60	0-10	6.0-20	0.03-0.05	6.6-7.3	8-16	Low-------	0.10			
50--------------- Brazito	0-10	5-15	2.0-6.0	0.09-0.11	7.4-8.4	4-8	Low-------	0.28	5	3	.4-.6
	10-16	5-12	6.0-20	0.06-0.08	7.4-8.4	4-8	Low-------	0.20			
	16-60	5-10	6.0-20	0.03-0.05	7.4-8.4	4-8	Low-------	0.10			
52--------------- Saneli	0-15	40-65	<0.06	0.09-0.11	7.9-8.4	2-8	High------	0.28	5	4	.5-1
	15-60	6-12	6.0-20	0.03-0.08	7.4-8.4	2-8	Low-------	0.17			
60. Typic Ustifluvents											
111*: Armijo----------	0-2	35-50	0.06-0.2	0.09-0.11	7.9-9.0	8-16	High------	0.24	5	4	.7-1
	2-60	35-50	<0.06	0.07-0.09	>7.8	8-16	High------	0.28			
Urban land.											
114*: Saneli----------	0-23	40-65	<0.06	0.10-0.12	7.9-8.4	2-8	High------	0.24	5	4	.5-1
	23-60	6-12	6.0-20	0.03-0.08	7.4-8.4	2-8	Low-------	0.17			
Urban land.											
116*: Caliza Variant--	0-2	5-10	6.0-20	0.03-0.05	7.4-7.8	<4	Low-------	0.10	3	3	<.5
	2-5	15-20	2.0-6.0	0.11-0.13	7.4-7.8	<4	Low-------	0.24			
	5-28	20-35	0.6-2.0	0.12-0.14	7.9-8.4	<4	Low-------	0.24			
	28-60	0-12	6.0-20	0.02-0.04	7.4-7.8	<4	Low-------	0.05			
Urban land.											

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
118*-------------- Arizo	0-3	0-5	6.0-20	0.04-0.06	7.4-9.0	<2	Low--------	0.15	5	8	<.5
	3-60	0-5	>20	0.04-0.06	7.4-9.0	<2	Low--------	0.10			
120*:											
Adelino Variant-	0-4	15-20	2.0-6.0	0.06-0.08	7.9-8.4	<4	Low--------	0.10	4	4L	<.5
	4-54	20-35	0.6-2.0	0.11-0.13	7.9-9.0	<4	Low--------	0.15			
	54-60	10-18	0.6-2.0	0.09-0.11	>9.0	<4	Low--------	0.15			
Caliza-----------	0-4	4-10	2.0-6.0	0.06-0.08	7.9-8.4	<2	Low--------	0.10	3	4L	<1
	4-60	2-8	6.0-20	0.03-0.07	7.9-9.0	<2	Low--------	0.05			
122-------------- Glendale	0-8	10-18	2.0-6.0	0.08-0.10	7.4-8.4	4-8	Low--------	0.24	5	3	.5-1
	8-60	18-35	0.2-0.6	0.13-0.15	7.4-8.4	4-8	Moderate	0.37			
124-------------- Caliza	0-22	10-20	2.0-6.0	0.05-0.07	7.9-8.4	<2	Low--------	0.10	3	4L	.5-.7
	22-60	0-10	6.0-20	0.03-0.05	7.9-9.0	2-4	Low--------	0.10			
128-------------- Turney Variant	0-2	12-18	2.0-6.0	0.08-0.10	7.9-8.4	<4	Low--------	0.15	4	4	<.5
	2-35	20-27	0.6-2.0	0.11-0.13	7.4-9.0	<4	Low--------	0.20			
	35-49	12-18	2.0-6.0	0.08-0.10	8.5-9.0	<4	Low--------	0.15			
	49-60	5-10	6.0-20	0.03-0.05	8.5-9.0	<4	Low--------	0.05			
132-------------- Gila	0-9	10-18	2.0-6.0	0.10-0.12	7.9-8.4	4-8	Low--------	0.28	5	3	.5-1
	9-51	10-18	0.6-2.0	0.13-0.15	7.9-8.4	4-8	Low--------	0.49			
	51-60	10-18	0.6-2.0	0.13-0.15	7.4-8.4	4-8	Low--------	0.43			
211-------------- Armijo	0-10	40-50	0.06-0.2	0.07-0.09	7.9-8.4	8-16	High-------	0.20	5	4	<1
	10-44	40-50	<0.06	0.07-0.09	7.9-8.4	8-16	High-------	0.20			
	44-60	30-35	0.6-2.0	0.07-0.09	>8.4	8-16	Moderate	0.32			
214-------------- Saneli	0-29	40-65	<0.06	0.10-0.12	7.9-8.4	2-8	High-------	0.20	5	4	.5-1
	29-60	6-12	6.0-20	0.03-0.08	7.4-8.4	2-8	Low--------	0.17			
222-------------- Glendale	0-19	28-35	0.2-0.6	0.13-0.15	7.4-8.4	4-8	Moderate	0.32	5	4L	.5-1
	19-60	18-35	0.2-0.6	0.12-0.14	7.4-8.4	4-8	Moderate	0.37			
226-------------- Popotosa	0-11	28-35	0.2-0.6	0.14-0.16	7.9-8.4	4-8	Moderate	0.32	5	4L	.7-.9
	11-29	18-35	0.2-0.6	0.13-0.15	7.4-9.0	4-8	Moderate	0.37			
	29-60	0-5	6.0-20	0.04-0.06	6.6-7.8	2-4	Low--------	0.10			
232-------------- Gila	0-14	28-34	0.2-0.6	0.14-0.16	7.9-8.4	4-8	Moderate	0.32	5	4L	.5-1
	14-60	10-18	0.6-2.0	0.08-0.10	7.4-8.4	4-8	Low--------	0.49			
244-------------- Anthony	0-12	5-15	2.0-6.0	0.05-0.07	7.4-8.4	8-16	Low--------	0.24	5	3	.5-1
	12-60	8-15	2.0-6.0	0.05-0.07	7.4-8.4	8-16	Low--------	0.32			
250-------------- Brazito	0-10	5-15	2.0-6.0	0.09-0.11	7.4-8.4	4-8	Low--------	0.28	5	3	.4-.6
	10-14	5-12	6.0-20	0.06-0.08	7.4-8.4	4-8	Low--------	0.20			
	14-60	5-10	6.0-20	0.04-0.06	7.4-8.4	4-8	Low--------	0.10			
401*:											
Motoqua----------	0-3	10-18	0.6-2.0	0.08-0.10	6.6-7.3	<2	Low--------	0.10	1	7	2-4
	3-16	15-30	0.2-0.6	0.09-0.11	6.6-7.3	<2	Low--------	0.10			
	16	---	---	---	---	---	----------	----			
Rock outcrop.											
403*:											
Puertecito-------	0-2	12-18	0.6-2.0	0.08-0.10	6.6-7.3	<2	Low--------	0.10	1	7	1-2
	2-14	23-35	0.2-0.6	0.09-0.11	6.6-7.3	<2	Low--------	0.10			
	14	---	---	---	---	---	----------	----			
Rock outcrop.											

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
404*:											
Motoqua----------	0-2	10-20	0.6-2.0	0.12-0.14	6.6-7.3	<2	Low--------	0.20	1	6	1-2
	2-16	20-32	0.2-0.6	0.09-0.11	6.6-7.3	<2	Low--------	0.10			
	16	---	---	---	---	---	-----------	----			
Rock outcrop.											
405--------------- Thunderbird	0-10	20-27	0.6-2.0	0.12-0.14	6.6-7.8	<2	Low--------	0.20	2	7	1-2
	10-29	35-55	0.06-0.2	0.14-0.16	6.6-8.4	<2	High-------	0.28			
	29	---	---	---	---	---	-----------	----			
410*:											
Clovis-----------	0-6	10-17	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low--------	0.28	5	3	.8-2
	6-60	18-35	0.6-2.0	0.14-0.18	6.6-8.4	<2	Moderate	0.32			
Penistaja--------	0-4	10-20	0.6-2.0	0.13-0.15	6.6-8.4	<2	Low--------	0.28	5	3	.8-2
	4-60	20-30	0.6-2.0	0.15-0.18	6.6-8.4	<2	Moderate	0.32			
418*:											
Rizozo-----------	0-4	18-27	0.6-2.0	0.12-0.14	7.4-8.4	<2	Low--------	0.20	1	5	<1
	4-12	18-27	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.32			
	12	---	---	---	---	---	-----------	----			
Alicia-----------	0-5	10-18	2.0-6.0	0.15-0.17	7.4-8.4	<2	Low--------	0.55	5	3	.8-1
	5-60	18-30	0.2-0.6	0.18-0.20	7.4-8.4	<2	Low--------	0.43			
Rock outcrop.											
419*:											
Navajo-----------	0-3	20-27	0.6-2.0	0.10-0.12	7.9-9.0	8-16	Low--------	0.43	5	4L	<.5
	3-16	35-40	0.06-0.2	0.10-0.12	8.5-9.0	8-16	Moderate	0.37			
	16-60	50-55	<0.06	0.08-0.10	7.9-9.0	8-16	High-------	0.24			
Alicia-----------	0-3	15-25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.37	5	4L	1-2
	3-36	26-35	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	0.37			
	36-60	18-30	0.6-2.0	0.18-0.20	7.4-8.4	<2	Low--------	0.43			
421*:											
Glenberg---------	0-8	8-20	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low--------	0.24	5	3	.8-2
	8-60	8-15	2.0-6.0	0.07-0.12	7.4-8.4	<2	Low--------	0.10			
Riverwash.											
424--------------- Manzano	0-8	10-25	0.6-2.0	0.19-0.21	6.6-7.8	<2	Low--------	0.43	5	5	2-3
	8-60	18-34	0.2-0.6	0.18-0.20	7.4-8.4	<2	Moderate	0.37			
425--------------- Sparank	0-2	30-40	0.2-0.6	0.19-0.21	7.4-8.4	<4	Moderate	0.37	5	4L	1-2
	2-60	35-60	<0.06	0.16-0.18	7.4-8.4	<4	High-------	0.32			
431*:											
Harvey-----------	0-2	10-20	2.0-6.0	0.11-0.15	7.4-8.4	<2	Low--------	0.28	5	3	.9-1
	2-52	18-35	0.6-2.0	0.14-0.18	7.9-8.4	<2	Moderate	0.37			
	52-60	10-25	0.6-2.0	0.09-0.12	7.9-8.4	<2	Low--------	0.28			
Winona-----------	0-2	15-20	2.0-6.0	0.06-0.08	7.9-8.4	2-4	Low--------	0.10	1	6	1-2
	2-10	15-25	0.6-2.0	0.07-0.09	7.9-9.0	2-4	Low--------	0.10			
	10	---	---	---	---	---	-----------	----			
432*:											
Harvey-----------	0-2	10-20	2.0-6.0	0.11-0.15	7.4-8.4	<2	Low--------	0.28	5	3	.9-1
	2-60	18-35	0.6-2.0	0.14-0.18	7.9-8.4	<2	Moderate	0.37			
Winona-----------	0-2	15-25	0.6-2.0	0.08-0.10	7.9-8.4	2-4	Low--------	0.10	1	6	1-2
	2-8	15-25	0.6-2.0	0.07-0.09	7.9-8.4	2-4	Low--------	0.10			
	8-17	15-25	0.6-2.0	0.07-0.09	7.9-9.0	2-4	Low--------	0.10			
	17	---	---	---	---	---	-----------	----			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
432*:											
Tanbark----------	0-1	10-18	2.0-6.0	0.11-0.13	8.5-9.0	2-4	Low--------	0.24	1	3	.3-.5
	1-10	---	---	---	---	---	----------	----			
	10	---	---	---	---	---	----------	----			
434*:											
Rizozo----------	0-2	18-20	2.0-6.0	0.09-0.11	7.4-8.4	<2	Low--------	0.15	1	4	<1
	2-10	18-27	0.6-2.0	0.09-0.11	7.4-8.4	<2	Low--------	0.17			
	10	---	---	---	---	---	----------	----			
Rock outcrop.											
445*:											
Millett----------	0-3	15-20	2.0-6.0	0.09-0.11	6.6-8.4	<2	Low--------	0.15	4	4	1-2
	3-18	15-25	0.6-2.0	0.11-0.13	7.4-8.4	<2	Low--------	0.28			
	18-60	15-25	0.6-2.0	0.06-0.09	7.9-9.0	<2	Low--------	0.10			
Sedillo----------	0-3	10-20	2.0-6.0	0.07-0.09	7.4-8.4	<2	Low--------	0.10	3	4L	.9-1
	3-19	22-34	0.2-0.6	0.09-0.11	7.4-8.4	<2	Moderate	0.10			
	19-60	15-25	0.6-2.0	0.07-0.09	7.9-9.0	<2	Low--------	0.10			
446*:											
Harvey----------	0-2	10-20	2.0-6.0	0.11-0.15	7.4-8.4	<2	Low--------	0.28	5	3	.8-1
	2-60	18-35	0.6-2.0	0.14-0.18	7.9-8.4	<2	Moderate	0.37			
Dean------------	0-2	15-20	2.0-6.0	0.09-0.11	7.9-9.0	<2	Low--------	0.15	4	4	1-2
	2-9	18-35	0.6-2.0	0.11-0.13	7.9-9.0	<2	Low--------	0.20			
	9-60	18-35	0.2-0.6	0.16-0.18	7.9-9.0	<2	Moderate	0.20			
449-------------- Cascajo	0-9	5-15	2.0-6.0	0.07-0.09	7.4-8.4	<2	Low--------	0.10	3	4L	.8-1
	9-17	0-15	6.0-20	0.05-0.08	7.4-8.4	<2	Low--------	0.10			
	17-60	0-5	6.0-20	0.05-0.06	7.4-8.4	<2	Low--------	0.10			
450-------------- Royosa	0-4	0-6	>20	0.06-0.07	6.6-7.8	<2	Low--------	0.17	5	1	1-2
	4-60	0-10	>20	0.05-0.08	6.6-7.8	<2	Low--------	0.17			
451-------------- Magdalena	0-2	10-15	0.6-2.0	0.11-0.13	6.1-7.3	<2	Low--------	0.20	3	7	.9-1
	2-60	35-50	<0.06	0.08-0.10	6.1-7.8	<2	High-------	0.10			
452*:											
Telescope--------	0-3	3-11	6.0-20	0.09-0.11	6.6-7.8	<2	Low--------	0.20	5	2	<.5
	3-45	5-15	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low--------	0.28			
	45-60	3-11	6.0-20	0.09-0.11	7.4-8.4	<2	Low--------	0.17			
Royosa----------	0-3	3-10	>20	0.09-0.11	6.6-7.8	<2	Low--------	0.20	5	2	1-2
	3-60	0-10	>20	0.05-0.08	6.6-7.8	<2	Low--------	0.17			
455-------------- Datil	0-2	9-17	2.0-6.0	0.12-0.14	7.4-7.8	<2	Low--------	0.24	5	3	1-3
	2-16	20-35	0.6-2.0	0.15-0.18	7.4-7.8	<2	Moderate	0.32			
	16-60	15-25	0.6-2.0	0.15-0.17	7.4-8.4	<2	Low--------	0.32			
459-------------- Pinon	0-2	15-20	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low--------	0.28	1	3	.9-1
	2-18	18-30	0.2-0.6	0.13-0.15	7.9-8.4	<2	Moderate	0.20			
	18	---	---	---	---	---	----------	----			
460*:											
Lapdun----------	0-9	15-20	0.6-2.0	0.12-0.14	7.9-9.0	<2	Low--------	0.20	3	5	1-3
	9-60	20-30	0.6-2.0	0.08-0.10	7.9-9.0	<2	Moderate	0.10			
Datil-----------	0-2	9-25	0.6-2.0	0.12-0.14	7.4-7.8	<2	Low--------	0.20	5	6	1-3
	2-13	18-35	0.6-2.0	0.15-0.18	7.4-7.8	<2	Moderate	0.32			
	13-60	15-25	0.6-2.0	0.09-0.11	7.4-7.8	<2	Low--------	0.20			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
472*:											
Abrazo----------	0-7	12-18	2.0-6.0	0.08-0.10	6.6-7.3	<2	Low-------	0.15	2	4	1-3
	7-27	35-45	0.06-0.2	0.12-0.14	6.6-8.4	<2	Moderate	0.15			
	27	---	---	---	---	---	----------	----			
Motoqua---------	0-2	10-20	0.6-2.0	0.08-0.10	6.1-7.3	<2	Low-------	0.10	1	7	1-3
	2-12	15-32	0.2-0.6	0.08-0.12	6.1-7.3	<2	Low-------	0.10			
	12	---	---	---	---	---	----------	----			
Rock outcrop.											
478*:											
Royosa----------	0-7	0-6	>20	0.05-0.06	6.6-7.8	<2	Low-------	0.10	5	1	1-2
	7-60	0-10	>20	0.05-0.08	6.6-7.8	<2	Low-------	0.17			
Loarc-----------	0-23	2-8	6.0-20	0.09-0.11	6.6-7.3	<2	Low-------	0.17	5	2	1-2
	23-60	18-35	0.6-2.0	0.14-0.16	6.1-8.4	<2	Moderate	0.32			
479--------------	0-3	8-17	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low-------	0.28	5	3	1-2
Augustine	3-37	18-35	0.6-2.0	0.16-0.18	7.4-7.8	<2	Moderate	0.37			
	37-60	18-35	0.6-2.0	0.13-0.15	7.9-8.4	<2	Moderate	0.37			
482*:											
Deama-----------	0-2	10-20	2.0-6.0	0.04-0.06	7.9-8.4	<2	Low-------	0.05	1	5	1-2
	2-12	18-27	0.6-2.0	0.04-0.09	7.9-8.4	<2	Low-------	0.10			
	12	---	---	---	---	---	----------	----			
Rock outcrop.											
484*:											
Mion------------	0-2	15-20	2.0-6.0	0.09-0.11	6.6-8.4	<2	Low-------	0.15	2	4	1-2
	2-16	38-55	<0.06	0.15-0.17	7.4-8.4	<2	High------	0.24			
	16	---	---	---	---	---	----------	----			
San Mateo-------	0-2	10-18	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.24	5	3	.5-.9
	2-47	20-35	0.6-2.0	0.15-0.17	7.4-8.4	2-4	Moderate	0.32			
	47-60	18-35	0.2-0.6	0.15-0.17	7.4-9.0	2-4	Moderate	0.32			
Rock outcrop.											
491*. Riverwash											
510*:											
Guy-------------	0-9	5-17	2.0-6.0	0.10-0.13	7.9-8.4	<2	Low-------	0.24	4	3	1-2
	9-60	5-17	2.0-6.0	0.08-0.12	7.9-8.4	<2	Low-------	0.20			
Dioxice---------	0-3	18-23	0.6-2.0	0.15-0.17	7.4-7.8	<2	Low-------	0.37	5	4L	1-2
	3-24	20-35	0.6-2.0	0.13-0.15	7.4-8.4	<2	Moderate	0.32			
	24-60	20-27	0.6-2.0	0.13-0.15	7.4-7.8	<2	Low-------	0.32			
Pena------------	0-11	7-15	2.0-6.0	0.11-0.13	6.6-8.4	<2	Low-------	0.24	3	3	1-2
	11-60	10-30	0.6-2.0	0.07-0.09	7.4-8.4	2-4	Low-------	0.10			
530--------------	0-14	2-8	6.0-20	0.07-0.09	6.6-7.3	<2	Low-------	0.17	5	2	1-2
Loarc	14-23	18-35	0.6-2.0	0.14-0.16	5.6-8.4	<2	Moderate	0.32			
	23-36	10-25	2.0-6.0	0.11-0.13	6.1-9.0	<2	Low-------	0.24			
	36-60	10-25	2.0-6.0	0.09-0.11	6.1-9.0	<2	Low-------	0.15			
540--------------	0-4	15-20	2.0-6.0	0.09-0.10	6.6-7.3	<2	Low-------	0.15	3	4	1-2
Goldust	4-22	15-26	0.6-2.0	0.10-0.12	6.6-7.8	<2	Low-------	0.10			
	22-35	40-60	0.06-0.2	0.09-0.11	7.4-8.4	<2	High------	0.05			
	35-60	40-55	0.06-0.2	0.10-0.12	7.9-8.4	<2	High------	0.10			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
549-------------- Ladron	0-2	12-18	2.0-6.0	0.06-0.08	7.4-7.8	<2	Low--------	0.10	2	4L	.9-1
	2-31	18-26	0.6-2.0	0.08-0.09	7.4-8.4	<2	Low--------	0.10			
	31-47	8-15	2.0-6.0	0.06-0.07	7.9-8.4	<2	Low--------	0.10			
	47-60	18-24	0.6-2.0	0.08-0.09	8.5-9.0	<2	Low--------	0.10			
555-------------- Datil	0-3	9-25	0.6-2.0	0.12-0.14	7.4-7.8	<2	Low--------	0.20	5	6	1-3
	3-15	20-35	0.6-2.0	0.15-0.18	7.4-7.8	<2	Moderate	0.32			
	15-60	15-25	0.6-2.0	0.12-0.15	7.4-8.4	<2	Low--------	0.32			
556*:											
Loarc-----------	0-3	10-15	2.0-6.0	0.12-0.14	6.6-7.3	<2	Low--------	0.24	5	3	1-3
	3-32	20-30	0.6-2.0	0.12-0.14	6.6-8.4	<2	Moderate	0.32			
	32-60	10-25	2.0-6.0	0.11-0.13	6.6-9.0	<2	Low--------	0.24			
Datil-----------	0-7	15-25	0.6-2.0	0.15-0.17	7.4-7.8	<2	Low--------	0.37	5	5	1-3
	7-22	20-35	0.6-2.0	0.15-0.18	7.4-7.8	<2	Moderate	0.32			
	22-40	15-25	0.6-2.0	0.12-0.15	7.4-8.4	<2	Low--------	0.32			
	40-60	15-25	0.6-2.0	0.09-0.11	7.4-7.8	<2	Low--------	0.20			
Majada----------	0-7	15-25	0.6-2.0	0.15-0.17	6.6-7.8	<2	Low--------	0.37	2	5	1-2
	7-21	25-35	0.2-0.6	0.08-0.10	7.4-7.8	<2	Low--------	0.10			
	21-60	20-30	0.6-2.0	0.06-0.08	7.4-9.0	<2	Low--------	0.10			
570*:											
La Fonda--------	0-3	10-15	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low--------	0.24	5	3	.6-.8
	3-60	18-35	0.6-2.0	0.16-0.19	7.4-8.4	<2	Moderate	0.32			
Torriorthents.											
Rock outcrop.											
575-------------- Flaco	0-2	13-26	0.6-2.0	0.12-0.14	6.6-8.4	<2	Low--------	0.20	2	5	1-2
	2-24	18-30	0.2-0.6	0.15-0.17	7.4-8.4	<2	Low--------	0.32			
	24	---	---	---	---	---	----------	----			
580-------------- Landavaso	0-10	15-20	2.0-6.0	0.10-0.12	6.6-7.3	<2	Low--------	0.24	4	3	1-2
	10-27	20-35	0.6-2.0	0.11-0.13	6.6-7.3	<2	Low--------	0.15			
	27-60	0-8	6.0-20	0.03-0.05	6.6-7.3	<2	Low--------	0.05			
582*:											
Tanbark---------	0-1	18-20	0.6-2.0	0.15-0.17	8.5-9.0	2-4	Low--------	0.55	1	3	.3-.5
	1-18	---	---	---	---	---	----------	----			
	18	---	---	---	---	---	----------	----			
Winona----------	0-2	15-25	0.6-2.0	0.08-0.10	7.9-8.4	2-4	Low--------	0.10	1	6	1-2
	2-12	15-25	0.6-2.0	0.07-0.09	7.9-9.0	2-4	Low--------	0.10			
	12	---	---	---	---	---	----------	----			
585*:											
Rock outcrop.											
Travessilla-----	0-13	10-18	2.0-6.0	0.10-0.12	6.6-8.4	<2	Low--------	0.15	1	4	1-2
	13	---	---	---	---	---	----------	----			
600*:											
Elbutte---------	0-6	27-35	0.2-0.6	0.14-0.16	7.4-8.4	2-4	Moderate	0.15	1	5	.5-1
	6-16	35-40	0.06-0.2	0.09-0.11	7.4-8.4	2-4	Low--------	0.05			
	16	---	---	---	---	---	----------	----			
Courthouse Variant--------	0-2	10-20	2.0-6.0	0.07-0.09	7.9-8.4	<4	Low--------	0.10	1	4L	<.5
	2-7	20-35	0.6-2.0	0.08-0.10	7.9-8.4	<4	Low--------	0.10			
	7	---	---	---	---	---	----------	----			
Rock outcrop.											

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
601 Oscura	0-9	35-40	0.2-0.6	0.12-0.14	7.4-8.4	4-8	Moderate	0.37	5	4L	1-2
	9-60	35-50	0.06-0.2	0.10-0.12	7.4-8.4	4-8	High	0.32			
603*:											
Wink	0-2	5-15	2.0-6.0	0.06-0.10	7.4-8.4	<2	Low	0.17	5	2	<.5
	2-60	8-18	2.0-6.0	0.10-0.15	7.4-8.4	<2	Low	0.28			
Dona Ana	0-3	0-10	2.0-6.0	0.06-0.08	7.4-8.4	<2	Low	0.17	5	2	.2-.5
	3-16	18-35	0.6-2.0	0.13-0.17	7.9-8.4	2-4	Moderate	0.32			
	16-60	15-25	0.6-2.0	0.13-0.17	7.9-8.4	2-4	Low	0.28			
604 Turney	0-3	5-12	6.0-20	0.06-0.08	7.4-8.4	<2	Low	0.17	5	2	.4-.6
	3-60	18-35	0.6-2.0	0.13-0.15	7.4-9.0	2-4	Moderate	0.32			
605 Armijo	0-6	40-50	0.06-0.2	0.07-0.09	7.9-8.4	8-16	High	0.20	5	4	.7-.9
	6-60	40-50	<0.06	0.05-0.08	>8.4	8-16	High	0.20			
606 Largo	0-3	15-25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low	0.37	5	4L	.6-.8
	3-60	18-35	0.2-0.6	0.16-0.21	7.4-8.4	<2	Moderate	0.43			
610 Belen	0-5	40-65	<0.06	0.08-0.10	8.5-9.0	>8	High	0.20	5	4	.7-1
	5-24	40-65	<0.06	0.08-0.10	8.5-9.0	>8	High	0.24			
	24-60	5-20	0.6-2.0	0.08-0.10	7.9-9.0	>8	Low	0.32			
615*:											
Anthony	0-2	5-10	6.0-20	0.05-0.07	7.4-8.4	<4	Low	0.17	5	1	.5-1
	2-26	10-18	0.6-2.0	0.10-0.12	7.4-8.4	<4	Low	0.49			
	26-60	5-10	2.0-6.0	0.08-0.10	7.4-8.4	<4	Low	0.49			
Gila	0-4	10-18	2.0-6.0	0.13-0.15	7.9-8.4	<4	Low	0.28	5	3	.5-1
	4-60	10-18	0.6-2.0	0.14-0.16	7.4-8.4	<4	Low	0.28			
620 Bluepoint	0-5	2-6	6.0-20	0.09-0.11	7.4-9.0	<2	Low	0.17	5	2	<.5
	5-60	2-6	6.0-20	0.05-0.09	7.9-9.0	<4	Low	0.17			
621*:											
Arizo	0-2	0-5	6.0-20	0.09-0.11	7.4-9.0	<2	Low	0.15	3	4	<.5
	2-60	0-5	>20	0.01-0.04	7.4-9.0	<2	Low	0.05			
Riverwash.											
625 Berino	0-9	15-20	2.0-6.0	0.10-0.13	6.6-8.4	<2	Low	0.24	5	3	.4-.8
	9-60	18-35	0.6-2.0	0.13-0.17	7.4-9.0	2-4	Moderate	0.32			
627*:											
Berino	0-10	5-10	6.0-20	0.05-0.07	6.6-8.4	<2	Low	0.17	5	2	.3-.6
	10-31	18-35	0.6-2.0	0.13-0.17	7.4-8.4	2-4	Moderate	0.32			
	31-60	18-35	0.6-2.0	0.10-0.15	7.9-9.0	2-4	Moderate	0.32			
Dona Ana	0-6	5-15	2.0-6.0	0.10-0.13	7.4-8.4	<2	Low	0.24	5	3	.2-.5
	6-45	18-35	0.6-2.0	0.13-0.17	7.9-8.4	2-4	Moderate	0.32			
	45-60	15-25	0.6-2.0	0.13-0.17	7.9-8.4	2-4	Low	0.28			
634*:											
Lozier	0-3	18-27	0.6-2.0	0.05-0.10	7.9-8.4	<2	Low	0.10	1	6	<1
	3-16	20-35	0.6-2.0	0.05-0.10	7.9-8.4	<2	Low	0.10			
	16	---	---	---	---	---	---	---			
Rock outcrop.											
635*:											
Wink	0-2	3-10	6.0-20	0.05-0.07	7.4-8.4	<2	Low	0.17	5	1	<.5
	2-60	8-18	2.0-6.0	0.10-0.15	7.4-8.4	<2	Low	0.28			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
635*:											
Pajarito--------	0-2	5-12	2.0-6.0	0.09-0.11	7.4-8.4	<2	Low--------	0.20	5	2	.4-.7
	2-60	15-20	2.0-6.0	0.13-0.15	7.9-8.4	<2	Low--------	0.24			
636*:											
Campana---------	0-3	5-15	6.0-20	0.08-0.09	7.4-8.4	<2	Low--------	0.20	3	2	<.5
	3-32	18-30	0.6-2.0	0.13-0.15	7.4-8.4	2-4	Low--------	0.37			
	32-60	---	---	---	---	---	----------	----			
Yesum-----------	0-1	5-10	2.0-6.0	0.10-0.12	7.4-8.4	<2	Low--------	0.49	5	1	.2-.4
	1-60	---	---	---	---	---	----------	----			
638-------------- Nickel Variant	0-2	5-15	2.0-6.0	0.05-0.07	7.9-9.0	<4	Low--------	0.10	2	4L	<.5
	2-6	8-17	0.6-2.0	0.07-0.09	7.9-9.0	<4	Low--------	0.10			
	6-30	5-10	2.0-6.0	0.04-0.06	7.9-9.0	<4	Low--------	0.05			
	30-60	0-7	>20	0.02-0.04	7.9-9.0	<4	Low--------	0.02			
641-------------- Turney	0-4	18-27	0.6-2.0	0.15-0.17	7.4-8.4	<2	Low--------	0.37	5	4L	.4-.6
	4-60	18-35	0.6-2.0	0.15-0.18	7.4-9.0	2-4	Moderate	0.37			
645*:											
Yesum, overblown	0-8	5-10	6.0-20	0.05-0.07	7.4-8.4	<2	Low--------	0.17	5	1	.2-.4
	8-60	---	---	---	---	---	----------	----			
Yesum-----------	0-1	5-10	2.0-6.0	0.10-0.12	7.4-8.4	<2	Low--------	0.49	5	1	.2-.4
	1-60	---	---	---	---	---	----------	----			
646-------------- Yesum	0-1	5-15	0.6-2.0	0.15-0.17	7.4-8.4	<2	Low--------	0.55	5	3	.3-.5
	1-60	---	---	---	---	---	----------	----			
648*:											
Armijo----------	0-3	30-40	0.2-0.6	0.06-0.08	7.9-8.4	>16	Moderate	0.37	5	4L	.7-.9
	3-60	40-50	<0.06	0.05-0.08	7.9-9.0	>16	High-------	0.32			
Glendale--------	0-12	28-35	0.2-0.6	0.05-0.07	7.9-9.0	>16	Moderate	0.32	5	4L	.5-1
	12-60	18-35	0.2-0.6	0.05-0.07	7.9-9.0	>16	Moderate	0.37			
Bluepoint-------	0-8	5-8	6.0-20	0.05-0.07	7.9-9.0	4-8	Low--------	0.17	5	2	<.5
	8-60	5-8	6.0-20	0.04-0.06	7.9-9.0	4-8	Low--------	0.15			
649*:											
Nickel----------	0-8	7-15	2.0-6.0	0.07-0.09	7.9-8.4	<2	Low--------	0.10	3	4L	<.5
	8-60	5-10	0.2-0.6	0.04-0.07	7.9-9.0	<2	Low--------	0.05			
Caliza----------	0-17	10-20	2.0-6.0	0.05-0.07	7.9-8.4	<2	Low--------	0.10	3	4L	.5-.7
	17-60	0-10	6.0-20	0.03-0.05	7.9-9.0	2-4	Low--------	0.05			
650*:											
Typic Camborthids.											
Nolam-----------	0-2	15-20	2.0-6.0	0.04-0.06	6.6-8.4	<2	Low--------	0.10	3	4L	1-2
	2-26	18-35	0.6-2.0	0.04-0.08	6.6-8.4	<2	Low--------	0.10			
	26-60	0-8	6.0-20	0.04-0.06	7.9-8.4	<2	Low--------	0.05			
651-------------- Barana	0-3	15-25	0.6-2.0	0.15-0.17	7.4-8.4	<2	Low--------	0.37	5	4L	1-3
	3-23	18-35	0.2-0.6	0.18-0.20	7.4-8.4	<2	Moderate	0.37			
	23-60	18-35	0.6-2.0	0.15-0.17	7.4-8.4	<2	Moderate	0.32			
653-------------- Bucklebar	0-4	20-30	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.32	5	5	.5-1
	4-24	25-35	0.6-2.0	0.13-0.17	7.4-8.4	<2	Moderate	0.32			
	24-33	10-25	0.6-2.0	0.13-0.17	7.4-8.4	<2	Low--------	0.37			
	33-60	10-30	0.6-2.0	0.13-0.19	7.9-8.4	<2	Moderate	0.37			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
655------------- Nolam	0-2	10-18	2.0-6.0	0.07-0.12	6.6-8.4	<2	Low-------	0.15	3	4	1-2
	2-13	18-35	0.6-2.0	0.04-0.08	6.6-8.4	<2	Low-------	0.17			
	13-60	15-20	2.0-6.0	0.04-0.06	7.9-8.4	<2	Low-------	0.10			
656*:											
Aftaden---------	0-2	4-14	6.0-20	0.07-0.09	6.6-7.3	<2	Low-------	0.20	1	2	.3-.5
	2-11	7-18	2.0-6.0	0.09-0.11	6.6-7.8	<2	Low-------	0.24			
	11	---	---	---	---	---	----------	----			
Akela-----------	0-2	5-10	6.0-20	0.07-0.09	7.4-8.4	<2	Low-------	0.10	1	3	.3-.5
	2-12	10-15	0.6-2.0	0.05-0.10	7.4-8.4	<2	Low-------	0.10			
	12	---	---	---	---	---	----------	----			
Lava flows.											
657*:											
Akela-----------	0-3	10-15	0.6-2.0	0.07-0.10	7.4-8.4	<2	Low-------	0.10	1	6	.3-.5
	3-12	10-15	0.6-2.0	0.05-0.10	7.4-8.4	<2	Low-------	0.10			
	12	---	---	---	---	---	----------	----			
Lava flows.											
Armendaris------	0-2	18-27	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low-------	0.43	5	6	1-2
	2-5	27-35	0.2-0.6	0.19-0.21	6.6-7.3	<2	Moderate	0.37			
	5-35	35-50	0.06-0.2	0.15-0.17	7.4-7.8	<2	Moderate	0.24			
	35-60	25-35	0.6-2.0	0.18-0.20	7.9-8.4	<2	Moderate	0.37			
660*. Dune land											
689*:											
Laborcita-------	0-2	12-18	2.0-6.0	0.05-0.07	7.4-7.8	<2	Low-------	0.10	4	4L	1-2
	2-7	15-20	2.0-6.0	0.05-0.07	7.4-7.8	<2	Low-------	0.10			
	7-60	18-25	0.6-2.0	0.12-0.14	7.4-8.4	<2	Low-------	0.20			
Pilabo----------	0-3	18-24	0.6-2.0	0.07-0.09	6.6-7.8	<2	Low-------	0.10	2	6	1-2
	3-35	18-27	0.6-2.0	0.07-0.09	6.6-8.4	<2	Low-------	0.10			
	35-60	18-24	0.6-2.0	0.07-0.09	7.4-7.8	<2	Low-------	0.10			
Lemitar---------	0-2	18-20	2.0-6.0	0.05-0.07	6.6-7.3	<2	Low-------	0.10	1	4L	1-2
	2-12	24-30	0.6-2.0	0.09-0.11	6.6-7.3	<2	Low-------	0.10			
	12	---	---	---	---	---	----------	----			
690*:											
Bluepoint-------	0-4	0-5	2.0-6.0	0.04-0.06	7.9-9.0	2-4	Low-------	0.05	5	4	<.5
	4-60	0-5	6.0-20	0.07-0.09	7.9-9.0	2-4	Low-------	0.15			
Caliza----------	0-4	2-8	6.0-20	0.04-0.05	7.9-8.4	<2	Low-------	0.05	3	4	.3-.6
	4-60	0-10	6.0-20	0.03-0.05	7.9-9.0	2-4	Low-------	0.10			
695------------- Deltajo	0-2	18-27	0.6-2.0	0.09-0.10	7.9-8.4	<2	Low-------	0.10	1	6	.3-.5
	2-13	18-27	0.6-2.0	0.12-0.14	7.9-8.4	<2	Low-------	0.20			
	13-22	18-27	0.6-2.0	0.14-0.16	7.9-8.4	<2	Low-------	0.24			
	22-33	---	---	---	---	---	----------	----			
	33	---	---	---	---	---	----------	----			
696*:											
Lithic Torriorthents.											
Lozier----------	0-2	15-20	2.0-6.0	0.05-0.10	7.9-8.4	<2	Low-------	0.10	1	4L	<1
	2-12	20-35	0.6-2.0	0.08-0.10	7.9-8.4	<2	Low-------	0.10			
	12	---	---	---	---	---	----------	----			
Rock outcrop.											

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
705*:											
Socorro----------	0-3	10-20	2.0-6.0	0.07-0.09	7.9-8.4	<2	Low--------	0.10	1	4L	1-2
	3-25	20-27	0.6-2.0	0.08-0.10	8.5-9.0	<2	Low--------	0.15			
	25	---	---	---	---	---	----------	----			
Flaco------------	0-1	10-20	2.0-6.0	0.13-0.15	6.6-8.4	<2	Low--------	0.28	2	3	1-2
	1-6	18-35	0.2-0.6	0.17-0.19	7.4-8.4	<2	Moderate	0.37			
	8-22	18-30	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.32			
	22	---	---	---	---	---	----------	----			
709*:											
Penistaja--------	0-4	10-20	2.0-6.0	0.13-0.15	6.6-8.4	<2	Low--------	0.28	5	3	.8-2
	4-37	20-30	0.6-2.0	0.15-0.18	6.6-8.4	<2	Moderate	0.32			
	37-60	15-20	2.0-6.0	0.11-0.13	6.6-8.4	<2	Low--------	0.28			
Clovis-----------	0-4	10-17	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low--------	0.28	5	3	.8-2
	4-60	18-35	0.6-2.0	0.14-0.18	6.6-8.4	<2	Moderate	0.32			
716*:											
Creel------------	0-3	18-24	0.6-2.0	0.12-0.14	7.4-7.8	<2	Low--------	0.20	1	5	1-2
	3-23	18-24	0.6-2.0	0.11-0.13	7.9-8.4	2-4	Low--------	0.17			
	23	---	---	---	---	---	----------	----			
Musofare---------	0-2	12-18	0.6-2.0	0.12-0.14	6.6-7.3	<2	Low--------	0.20	1	6	.9-1
	2-14	20-35	0.2-0.6	0.08-0.10	6.6-7.8	<2	Moderate	0.10			
	14-26	15-18	0.6-2.0	0.12-0.14	7.4-8.4	2-4	Low--------	0.20			
	26-31	---	---	---	---	---	----------	----			
	31	---	---	---	---	---	----------	----			
Clovis-----------	0-2	10-17	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low--------	0.28	5	3	.8-2
	2-41	18-35	0.6-2.0	0.14-0.18	6.6-8.4	<2	Moderate	0.32			
	41-60	9-17	2.0-6.0	0.15-0.17	7.9-8.4	<2	Low--------	0.43			
717*:											
Penistaja--------	0-11	5-10	6.0-2.0	0.05-0.07	6.6-8.4	<2	Low--------	0.17	5	1	.3-.7
	11-25	20-30	0.6-2.0	0.15-0.18	6.6-8.4	<2	Moderate	0.32			
	25-60	15-25	2.0-6.0	0.12-0.15	6.6-8.4	<2	Low--------	0.28			
Clovis-----------	0-12	5-10	6.0-2.0	0.05-0.07	6.6-7.8	<2	Low--------	0.17	5	1	.4-.7
	12-60	18-35	0.6-2.0	0.14-0.18	6.6-8.4	<2	Moderate	0.32			
718*:											
Palma, thick surface---------	0-23	5-10	6.0-20	0.05-0.07	6.6-8.4	<2	Low--------	0.17	5	1	.4-.6
	23-60	10-18	2.0-6.0	0.13-0.17	7.4-8.4	<2	Low--------	0.28			
Penistaja--------	0-2	10-20	2.0-6.0	0.13-0.15	6.6-8.4	<2	Low--------	0.28	5	3	.8-2
	2-22	20-30	0.6-2.0	0.15-0.18	6.6-8.4	<2	Moderate	0.32			
	22-60	15-25	2.0-6.0	0.12-0.15	6.6-8.4	<2	Low--------	0.28			
Palma------------	0-3	5-10	6.0-20	0.09-0.11	6.6-8.4	<2	Low--------	0.20	5	2	.4-.6
	3-32	10-18	2.0-6.0	0.13-0.17	7.4-8.4	<2	Low--------	0.28			
	32-60	5-15	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low--------	0.24			
724-------------- Gabaldon	0-2	18-27	0.6-2.0	0.19-0.21	7.4-8.4	<2	Low--------	0.43	5	4L	2-3
	2-60	18-35	0.6-2.0	0.19-0.21	7.4-8.4	<2	Moderate	0.37			
735*:											
Netoma-----------	0-2	10-18	0.6-2.0	0.10-0.12	7.4-7.8	4-8	Low--------	0.37	5	4L	.3-.5
	2-60	---	---	---	---	---	----------	----			
Claunch----------	0-2	14-18	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low--------	0.28	3	3	.4-.6
	2-28	18-27	0.6-2.0	0.15-0.17	7.4-8.4	2-4	Low--------	0.37			
	28-36	---	---	---	---	---	----------	----			
	36-60	10-24	2.0-6.0	0.13-0.15	7.4-8.4	4-8	Low--------	0.32			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
736*:											
Winona----------	0-1	15-25	0.6-2.0	0.08-0.10	7.9-8.4	2-4	Low------	0.10	1	6	1-2
	1-11	15-25	0.6-2.0	0.07.0.09	7.9-9.0	2-4	Low------	0.10			
	11	---	---	---	---	---	---------	----			
Tanbark---------	0-2	10-18	2.0-6.0	0.13-0.15	8.5-9.0	2-4	Low------	0.28	1	3	.3-.5
	2-16	---	---	---	---	---	---------	----			
	16	---	---	---	---	---	---------	----			
La Fonda--------	0-2	20-27	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low------	0.37	5	6	1-2
	2-60	18-35	0.6-2.0	0.16-0.19	7.4-8.4	<2	Moderate	0.32			
737*:											
Harvey----------	0-2	10-20	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low------	0.28	5	3	.9-1
	2-60	18-35	0.6-2.0	0.14-0.18	7.9-8.4	<2	Moderate	0.37			
La Fonda--------	0-7	10-15	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low------	0.28	5	3	.7-.9
	7-60	18-35	0.6-2.0	0.16-0.19	7.4-8.4	<2	Moderate	0.32			
738*:											
Harvey----------	0-4	15-20	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low------	0.55	5	3	1-2
	4-60	18-35	0.6-2.0	0.14-0.18	7.9-8.4	<2	Moderate	0.37			
Dean------------	0-4	15-20	2.0-6.0	0.09-0.11	7.9-9.0	<2	Low------	0.15	4	4	1-2
	4-58	18-35	0.2-0.6	0.13-0.15	7.9-9.0	<2	Moderate	0.20			
	58-60	20-35	0.6-2.0	0.14-0.16	7.9-9.0	<2	Low------	0.32			
749*:											
Ildecarb--------	0-16	18-25	0.6-2.0	0.12-0.14	7.9-9.0	<2	Low------	0.20	2	5	1-2
	16-48	18-35	0.6-2.0	0.06-0.08	7.9-9.0	2-4	Low------	0.10			
	48-60	18-35	0.2-0.6	0.07-0.09	7.9-9.0	2-4	Low------	0.10			
Dean------------	0-10	15-20	0.6-2.0	0.12-0.14	7.9-9.0	<2	Low------	0.20	4	5	1-2
	10-50	18-35	0.6-2.0	0.11-0.13	7.9-9.0	<2	Low------	0.20			
	50-60	20-35	0.6-2.0	0.14-0.16	7.9-9.0	<2	Low------	0.32			
760*:											
Sedillo---------	0-3	10-15	2.0-6.0	0.10-0.12	7.4-8.4	<2	Low------	0.15	3	4	1-2
	3-60	22-34	0.2-0.6	0.09-0.11	7.4-8.4	<2	Moderate	0.10			
Clovis----------	0-2	10-17	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low------	0.24	5	3	.8-2
	2-25	18-35	0.6-2.0	0.14-0.18	6.6-8.4	<2	Moderate	0.32			
	25-60	20-35	0.6-2.0	0.11-0.13	7.4-8.4	<2	Low------	0.15			
765*:											
Puertecito------	0-2	12-18	0.6-2.0	0.08-0.10	6.6-7.3	<2	Low------	0.10	1	7	1-2
	2-14	23-35	0.2-0.6	0.09-0.11	6.6-7.3	<2	Low------	0.10			
	14	---	---	---	---	---	---------	----			
Rock outcrop.											
783------------- Ponciano	0-3	30-40	0.2-0.6	0.10-0.12	7.9-8.4	<4	Moderate	0.10	4	6	1-2
	3-35	35-50	0.06-0.2	0.13-0.16	7.9-9.0	4-8	Moderate	0.15			
	35-60	35-40	0.06-0.2	0.13-0.15	7.9-9.0	4-8	Moderate	0.37			
785*:											
Torriorthents.											
Rock outcrop.											
786*:											
Rock outcrop.											
Badland.											

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
788*:											
Penistaja--------	0-6	10-20	2.0-6.0	0.13-0.15	6.6-8.4	<2	Low------	0.28	5	3	.8-2
	6-60	20-30	0.6-2.0	0.15-0.18	6.6-8.4	<2	Moderate	0.32			
Palma-----------	0-6	5-10	6.0-20	0.09-0.11	6.6-8.4	<2	Low------	0.20	5	2	.4-.6
	6-60	5-15	0.6-2.0	0.11-0.14	7.4-8.4	<2	Low------	0.24			
800*:											
Haploborolls.											
Rock outcrop.											
801*:											
Calabasas, 2 to 4 percent slopes----------	0-6	28-35	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	0.32	5	4L	1-2
	6-60	20-35	0.2-0.6	0.17-0.19	7.4-9.0	<2	Moderate	0.37			
Calabasas, 0 to 2 percent slopes----------	0-5	28-35	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	0.32	5	4L	1-2
	5-60	20-35	0.2-0.6	0.17-0.19	7.4-9.0	<2	Moderate	0.37			
805*:											
Tanbark----------	0-1	28-35	0.6-2.0	0.13-0.15	8.5-9.0	4-8	Low------	0.43	1	4L	.3-.5
	1-16	---	---	---	---	---	---------	----			
	16	---	---	---	---	---	---------	----			
Rayohill--------	0-1	18-27	0.6-2.0	0.11-0.13	7.4-8.4	4-8	Low------	0.37	1	4L	.3-.5
	1-26	---	---	---	---	---	---------	----			
	26	---	---	---	---	---	---------	----			
812-------------- Socorro	0-3	18-27	0.6-2.0	0.08-0.10	7.9-8.4	<2	Low------	0.10	1	6	1-2
	3-10	20-27	0.6-2.0	0.08-0.10	8.5-9.0	<2	Low------	0.15			
	10-28	20-30	2.0-6.0	0.05-0.07	8.5-9.0	<2	Low------	0.10			
	28	---	---	---	---	---	---------	----			
814*:											
Puice-----------	0-6	10-20	0.6-2.0	0.12-0.14	7.9-8.4	<2	Low------	0.20	1	5	1-2
	6-28	10-25	0.6-2.0	0.05-0.12	7.9-8.4	2-4	Low------	0.10			
	28	---	---	---	---	---	---------	----			
Tanbark----------	0-2	18-27	0.6-2.0	0.19-0.21	8.5-9.0	2-4	Low------	0.43	1	4L	.3-.5
	2-13	---	---	---	---	---	---------	----			
	13	---	---	---	---	---	---------	----			
Harvey----------	0-3	15-25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low------	0.37	5	4L	1-2
	3-60	18-35	0.6-2.0	0.14-0.18	7.9-8.4	<2	Moderate	0.37			
816*:											
Pirodel----------	0-3	4-8	6.0-20	0.05-0.07	7.4-7.8	<2	Low------	0.17	5	1	.5-.8
	3-30	4-8	6.0-20	0.07-0.09	7.4-7.8	<2	Low------	0.17			
	30-60	13-22	2.0-6.0	0.08-0.10	7.9-8.4	2-4	Low------	0.24			
Harvey----------	0-12	10-20	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low------	0.28	5	3	.9-1
	12-31	18-35	0.6-2.0	0.14-0.18	7.9-8.4	<2	Moderate	0.37			
	31-60	10-25	0.6-2.0	0.09-0.12	7.9-8.4	<2	Low------	0.28			
Pinon-----------	0-3	10-20	2.0-6.0	0.10-0.12	7.4-8.4	<2	Low------	0.15	1	4	.9-1
	3-18	18-30	0.2-0.6	0.13-0.15	7.9-8.4	<2	Moderate	0.20			
	18	---	---	---	---	---	---------	----			
818-------------- Mespun	0-11	3-8	<20	0.05-0.08	6.1-7.8	<2	Low------	0.17	5	1	<1
	11-60	3-8	6.0-20	0.05-0.09	6.1-7.8	<2	Low------	0.20			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PRPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
822-------------- Pirodel	0-2	4-8	6.0-20	0.05-0.07	7.4-7.8	<2	Low--------	0.17	5	1	.5-.8
	2-29	4.8	6.0-20	0.07-0.09	7.4-7.8	<2	Low--------	0.17			
	29-60	13-22	2.0-6.0	0.10-0.12	7.9-8.4	2-4	Low--------	0.24			
824-------------- Pinon	0-2	15-20	2.0-6.0	0.07-0.09	7.4-8.4	<2	Low--------	0.10	1	4L	.9-1
	2-17	18-30	0.2-0.6	0.13-0.15	7.9-8.4	<2	Moderate	0.20			
	17	---	---	---	---	---	----------	----			
826*:											
Harvey----------	0-2	10-20	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low--------	0.28	5	3	.9-1
	2-60	18-35	0.6-2.0	0.14-0.18	7.9-8.4	<2	Moderate	0.37			
Ildecarb--------	0-13	18-25	0.6-2.0	0.12-0.14	7.9-9.0	<2	Low--------	0.20	2	5	1-2
	13-60	18-27	0.6-2.0	0.06-0.08	7.9-9.0	2-4	Low--------	0.10			
Pinon-----------	0-3	15-20	2.0-6.0	0.08-0.10	7.4-8.4	<2	Low--------	0.15	1	4	1-2
	3-16	18-27	0.2-0.6	0.10-0.12	7.9-8.4	<2	Moderate	0.20			
	16	---	---	---	---	---	----------	----			
828*:											
Cuate-----------	0-1	18-24	0.6-2.0	0.07-0.09	7.4-8.4	<2	Low--------	0.10	1	6	1-2
	1-32	18-27	0.6-2.0	0.06-0.08	7.4-8.4	2-4	Low--------	0.10			
	32	---	---	---	---	---	----------	----			
Tanbark---------	0-6	18-27	0.6-2.0	0.19-0.21	8.5-9.0	2-4	Low--------	0.43	1	4L	.3-.5
	6-15	---	---	---	---	---	----------	----			
	15	---	---	---	---	---	----------	----			
830*:											
Cuate-----------	0-8	18-24	0.6-2.0	0.07-0.09	7.4-8.4	<2	Low--------	0.10	1	6	1-2
	8-33	18-27	0.6-2.0	0.06-0.08	7.4-8.4	2-4	Low--------	0.10			
	33	---	---	---	---	---	----------	----			
Deama-----------	0-18	18-27	0.6-2.0	0.06-0.08	7.9-8.4	<2	Low--------	0.10	1	6	1-3
	18	---	---	---	---	---	----------	----			
Tanbark---------	0-2	18-27	0.6-2.0	0.12-0.14	8.5-9.0	2-4	Low--------	0.20	1	5	.3-.5
	2-12	---	---	---	---	---	----------	----			
	12	---	---	---	---	---	----------	----			
832-------------- Jornaham	0-2	12-18	2.0-6.0	0.10-0.12	6.6-7.3	2-4	Low--------	0.15	3	4	.5-.8
	2-9	15-18	2.0-6.0	0.08-0.10	7.4-7.8	2-4	Low--------	0.15			
	9-34	15-18	0.6-2.0	0.11-0.13	7.4-7.8	2-4	Low--------	0.20			
	34-60	---	---	---	---	---	----------	----			
834*:											
San Mateo-------	0-2	15-25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.37	5	5	.5-.9
	2-36	20-35	0.6-2.0	0.15-0.17	7.4-8.4	2-4	Moderate	0.32			
	36-60	18-35	0.2-0.6	0.15-0.17	7.4-9.0	2-4	Moderate	0.32			
Glenberg--------	0-3	8-20	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low--------	0.28	5	3	.8-2
	3-60	8-15	2.0-6.0	0.07-0.12	7.4-8.4	<2	Low--------	0.10			
836*:											
Rayohill--------	0-1	5-15	2.0-6.0	0.09-0.11	7.4-8.4	4-8	Low--------	0.28	1	3	.3-.5
	1-33	---	---	---	---	---	----------	----			
	33	---	---	---	---	---	----------	----			
Clovis----------	0-2	10-17	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low--------	0.28	5	3	.8-2
	2-29	18-35	0.6-2.0	0.14-0.18	6.6-8.4	<2	Moderate	0.32			
	29-60	9-17	2.0-6.0	0.15-0.17	7.9-8.4	<2	Low--------	0.43			
838*:											
Tanbark---------	0-2	10-18	2.0-6.0	0.13-0.15	8.5-9.0	2-4	Low--------	0.28	1	3	.3-.5
	2-14	---	---	---	---	---	----------	----			
	14	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 12.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	In/hr	In/in	pH	mmhos/cm					Pct
838*:											
Rock outcrop.											
840*:											
Deama-----------	0-1	18-27	0.6-2.0	0.08-0.10	7.4-8.4	<2	Low--------	0.10	1	6	1-3
	1-19	18-27	0.6-2.0	0.10-0.13	7.4-8.4	<2	Low--------	0.15			
	19	---	---	---	---	---	-----------	----			
Rock outcrop.											
845*:											
Winona----------	0-2	15-25	0.6-2.0	0.08-0.10	7.9-8.4	2-4	Low--------	0.10	1	6	1-2
	2-11	15-25	0.6-2.0	0.07-0.09	7.9-8.4	2-4	Low--------	0.10			
	11-15	15-25	0.6-2.0	0.07-0.09	7.9-9.0	2-4	Low--------	0.10			
	15	---	---	---	---	---	-----------	----			
Rock outcrop.											
850*:											
Creel-----------	0-2	18-24	0.6-2.0	0.08-0.10	7.4-7.8	<2	Low--------	0.10	1	6	1-2
	2-23	18-24	0.6-2.0	0.11-0.13	7.9-8.4	2-4	Low--------	0.17			
	23	---	---	---	---	---	-----------	----			
Ponciano--------	0-2	30-40	0.2-0.6	0.09-0.11	7.9-8.4	<4	Moderate	0.10	4	6	1-2
	2-42	35-50	0.06-0.2	0.09-0.11	7.9-9.0	4-8	Moderate	0.15			
	42-60	35-50	0.06-0.2	0.12-0.14	7.9-9.0	4-8	Moderate	0.37			

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
11----------------- Armijo	D	None---------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High------	High.
14----------------- Saneli	D	None---------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High------	Low.
22----------------- Glendale	B	None---------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High------	Moderate.
26----------------- Popotosa	B	None---------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High------	Low.
32----------------- Gila	B	None---------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High------	Low.
37----------------- Agua	B	None---------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High------	Moderate.
44----------------- Anthony	B	None---------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High------	Moderate.
48----------------- Anthony Variant	D	None---------	---	---	0-2.0	Perched	May-Sep	>60	---	High------	High.
50----------------- Brazito	A	None---------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High------	Low.
52----------------- Saneli	D	None---------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High------	Low.
60. Typic Ustifluvents											
111*:											
Armijo------------	D	Rare---------	---	---	>6.0	---	---	>60	---	High------	High.
Urban land.											
114*:											
Saneli------------	D	Rare---------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High------	Low.
Urban land.											
116*:											
Caliza Variant---	B	Rare---------	---	---	>6.0	---	---	>60	---	High------	Low.
Urban land.											
118*--------------- Arizo	A	Occasional	Very brief	Mar-Sep	>6.0	---	---	>60	---	High------	Low.
120*:											
Adelino Variant--	B	None---------	---	---	>6.0	---	---	>60	---	High------	Low.
Caliza------------	B	None---------	---	---	>6.0	---	---	>60	---	High------	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
122--------------- Glendale	B	None---------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High-----	Moderate.
124--------------- Caliza	B	None---------	---	---	>6.0	---	---	>60	---	High-----	Low.
128--------------- Turney Variant	B	None---------	---	---	>6.0	---	---	>60	---	High-----	Low.
132--------------- Gila	B	None---------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High-----	Low.
211--------------- Armijo	D	Occasional	Brief to long.	Jun-Sep	3.5-6.0	Apparent	Jun-Sep	>60	---	High-----	High.
214--------------- Saneli	D	Occasional	Very brief	Jul-Oct	3.5-6.0	Apparent	Jun-Sep	>60	---	High-----	Low.
222--------------- Glendale	C	Occasional	Very brief	Jul-Sep	3.5-6.0	Apparent	Jun-Sep	>60	---	High-----	Moderate.
226--------------- Popotosa	B	Occasional	Very brief	Jul-Sep	3.5-6.0	Apparent	Jun-Sep	>60	---	High-----	Moderate.
232--------------- Gila	B	Occasional	Very brief	Jul-Sep	3.5-6.0	Apparent	Jun-Sep	>60	---	High-----	Low.
244--------------- Anthony	B	Occasional	Very brief	Jul-Sep	3.5-6.0	Apparent	Jun-Sep	>60	---	High-----	Moderate.
250--------------- Brazito	A	Occasional	Very brief	Jun-Sep	3.5-6.0	Apparent	Jun-Sep	>60	---	High-----	Moderate.
401*:											
Motoqua-----------	D	None---------	---	---	>6.0	---	---	12-20	Hard	Moderate	Low.
Rock outcrop.											
403*:											
Puertecito--------	D	None---------	---	---	>6.0	---	---	8-20	Hard	Moderate	Low.
Rock outcrop.											
404*:											
Motoqua-----------	D	None---------	---	---	>6.0	---	---	12-20	Hard	Moderate	Low.
Rock outcrop.											
405--------------- Thunderbird	D	None---------	---	---	>6.0	---	---	20-40	Hard	High-----	Low.
410*:											
Clovis------------	B	None---------	---	---	>6.0	---	---	>60	---	High-----	Low.
Penistaja---------	B	None---------	---	---	>6.0	---	---	>60	---	High-----	Low.
418*:											
Rizozo------------	D	None---------	---	---	>6.0	---	---	4-20	Hard	High-----	Low.
Alicia------------	B	Rare---------	---	---	>6.0	---	---	>60	---	High-----	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
418*:											
Rock outcrop.											
419*:											
Navajo----------	D	Frequent----	Very brief	Jul-Sep	>6.0	---	---	>60	---	High-----	High.
Alicia----------	B	Rare--------	---	---	>6.0	---	---	>60	---	High-----	Low.
421*:											
Glenberg---------	B	Occasional	Very brief	Apr-Aug	>6.0	---	---	>60	---	Moderate	Low.
Riverwash.											
424-------------- Manzano	B	Rare--------	---	---	3.5-6.0	Apparent	Jun-Sep	>60	---	High-----	Low.
425-------------- Sparank	D	Rare--------	---	---	>6.0	---	---	>60	---	High-----	Low.
431*:											
Harvey----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Winona----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	High-----	Low.
432*:											
Harvey----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Winona----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	High-----	Low.
Tanbark---------	D	None--------	---	---	>6.0	---	---	4-20	Hard	High-----	High.
434*:											
Rizozo----------	D	None--------	---	---	>6.0	---	---	5-20	Hard	High-----	Low.
Rock outcrop.											
445*:											
Millett---------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Sedillo---------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
446*:											
Harvey----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Dean------------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
449-------------- Cascajo	A	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
450-------------- Royosa	A	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low.
451-------------- Magdalena	D	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
452*:											
Telescope--------	A	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Royosa-----------	A	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
455----------------- Datil	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
459----------------- Pinon	D	None--------	---	---	>6.0	---	---	10-20	Hard	High-----	Low.
460*:											
Lapdun-----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Datil------------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
472*:											
Abrazo-----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	High-----	Low.
Motoqua----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low.
Rock outcrop.											
478*:											
Royosa-----------	A	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low.
Loarc------------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
479----------------- Augustine	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
482*:											
Deama------------	D	None--------	---	---	>6.0	---	---	6-20	Hard	High-----	Low.
Rock outcrop.											
484*:											
Mion-------------	D	None--------	---	---	>6.0	---	---	10-20	Soft	High-----	Low.
San Mateo--------	B	Rare--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Rock outcrop.											
491*. Riverwash											
510*:											
Guy--------------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Dioxice----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Pena-------------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
530----------------- Loarc	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
540----------------- Goldust	C	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
549----------------- Ladron	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
555----------------- Datil	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
556*:											
Loarc	B	None	---	---	>6.0	---	---	>60	---	High	Low.
Datil	B	None	---	---	>6.0	---	---	>60	---	High	Low.
Majada	B	None	---	---	>6.0	---	---	>60	---	High	Low.
570*:											
La Fonda	B	None	---	---	>6.0	---	---	>60	---	High	Low.
Torriorthents.											
Rock outcrop.											
575 Flaco	C	None	---	---	>6.0	---	---	20-40	Hard	High	Low.
580 Landavaso	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low.
582*:											
Tanbark	D	None	---	---	>6.0	---	---	4-20	Hard	High	High.
Winona	D	None	---	---	>6.0	---	---	10-20	Hard	High	Low.
585*:											
Rock outcrop.											
Travessilla	D	None	---	---	>6.0	---	---	6-20	Hard	High	Low.
600*:											
Elbutte	D	None	---	---	>6.0	---	---	6-20	Soft	High	Low.
Courthouse Variant	D	None	---	---	>6.0	---	---	4-20	Hard	High	Low.
Rock outcrop.											
601 Oscura	C	Frequent	Very brief	Jul-Aug	>6.0	---	---	>60	---	High	Low.
603*:											
Wink	B	None	---	---	>6.0	---	---	>60	---	High	Low.
Dona Ana	B	None	---	---	>6.0	---	---	>60	---	High	Low.
604 Turney	B	None	---	---	>6.0	---	---	>60	---	High	Low.
605 Armijo	D	Occasional	Brief to long.	Jun-Sep	>6.0	---	---	>60	---	High	High.
606 Largo	B	Rare	---	---	>6.0	---	---	>60	---	High	Low.
610 Belen	D	Occasional	Brief	Jun-Sep	>6.0	---	---	>60	---	High	High.
615*:											
Anthony	B	Rare	---	---	>6.0	---	---	>60	---	High	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
615*:											
Gila	B	Rare	---	---	>6.0	---	---	>60	---	High	Low.
620 Bluepoint	A	None	---	---	>6.0	---	---	>60	---	High	Low.
621*:											
Arizo	A	Occasional	Very brief	Mar-Sep	>6.0	---	---	>60	---	High	Low.
Riverwash.											
625 Berino	B	None	---	---	>6.0	---	---	>60	---	High	Low.
627*:											
Berino	B	None	---	---	>6.0	---	---	>60	---	High	Low.
Dona Ana	B	None	---	---	>6.0	---	---	>60	---	High	Low.
634*:											
Lozier	D	None	---	---	>6.0	---	---	6-16	Hard	High	Low.
Rock outcrop.											
635*:											
Wink	B	None	---	---	>6.0	---	---	>60	---	High	Low.
Pajarito	B	None	---	---	>6.0	---	---	>60	---	High	Low.
636*:											
Campana	B	None	---	---	>6.0	---	---	>60	---	High	High.
Yesum	B	None	---	---	>6.0	---	---	>60	---	High	High.
638 Nickel Variant	B	None	---	---	>6.0	---	---	>60	---	High	Low.
641 Turney	B	None	---	---	>6.0	---	---	>60	---	High	Low.
645*:											
Yesum, overblown	B	None	---	---	>6.0	---	---	>60	---	High	High.
Yesum	B	None	---	---	>6.0	---	---	>60	---	High	High.
646 Yesum	B	None	---	---	>6.0	---	---	>60	---	High	High.
648*:											
Armijo	D	Rare	---	---	>6.0	---	---	>60	---	High	High.
Glendale	C	Rare	---	---	>6.0	---	---	>60	---	High	High.
Bluepoint	A	Rare	---	---	>6.0	---	---	>60	---	High	High.
649*:											
Nickel	B	None	---	---	>6.0	---	---	>60	---	High	Low.
Caliza	B	None	---	---	>6.0	---	---	>60	---	High	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
650*: Typic Camborthids.											
Nolam	B	None	---	---	>6.0	---	---	>60	---	High	Low.
651 Barana	B	None	---	---	>6.0	---	---	>60	---	High	Low.
653 Bucklebar	B	None	---	---	>6.0	---	---	>60	---	High	Low.
655 Nolam	B	None	---	---	>6.0	---	---	>60	---	High	Low.
656*: Aftaden	D	None	---	---	>6.0	---	---	10-15	Hard	Moderate	Low.
Akela	D	None	---	---	>6.0	---	---	4-20	Hard	High	Low.
Lava flows.											
657*: Akela	D	None	---	---	>6.0	---	---	4-20	Hard	High	Low.
Lava flows.											
Armendaris	C	Rare	---	---	>6.0	---	---	>60	---	High	Low.
660*. Dune land											
689*: Laborcita	B	None	---	---	>6.0	---	---	>60	---	High	Low.
Pilabo	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low.
Lemitar	D	None	---	---	>6.0	---	---	8-14	Hard	Moderate	Low.
690*: Bluepoint	A	None	---	---	>6.0	---	---	>60	---	High	Low.
Caliza	B	None	---	---	>6.0	---	---	>60	---	High	Low.
695 Deltajo	C	None	---	---	>6.0	---	---	20-40	Soft	High	Low.
696*: Lithic Torriorthents.											
Lozier	D	None	---	---	>6.0	---	---	6-16	Hard	High	Low.
Rock outcrop.											
705*: Socorro	C	None	---	---	>6.0	---	---	20-40	Hard	High	Low.
Flaco	C	None	---	---	>6.0	---	---	20-40	Hard	High	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
709*:											
Penistaja--------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Clovis-----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
716*:											
Creel------------	C	None--------	---	---	>6.0	---	---	20-40	Soft	High-----	Low.
Musofare---------	C	None--------	---	---	>6.0	---	---	20-40	Soft	High-----	Low.
Clovis-----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
717*:											
Penistaja--------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Clovis-----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
718*:											
Palma, thick surface---	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Penistaja--------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Palma------------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
724--------------- Gabaldon	B	Occasional	Very brief	Jun-Sep	>6.0	---	---	>60	---	High-----	Low.
735*:											
Netoma-----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Claunch----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
736*:											
Winona-----------	D	None--------	---	---	>6.0	---	---	7-20	Hard	High-----	Low.
Tanbark----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	High-----	High.
La Fonda---------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
737*:											
Harvey-----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
La Fonda---------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
738*:											
Harvey-----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Dean-------------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
749*:											
Ildecarb---------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Dean-------------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
760*:											
Sedillo----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Clovis-----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
765*:											
Puertecito-------	D	None--------	---	---	>6.0	---	---	6-20	Hard	Moderate	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
765*:											
Rock outcrop.											
783 Ponciano	C	None	---	---	>6.0	---	---	>60	---	High	Low.
785*:											
Torriorthents.											
Rock outcrop.											
786*:											
Rock outcrop.											
Badland.											
788*:											
Penistaja	B	None	---	---	>6.0	---	---	>60	---	High	Low.
Palma	B	None	---	---	>6.0	---	---	>60	---	High	Low.
800*:											
Haploborolls.											
Rock outcrop.											
801*:											
Calabasas, 2 to 4 percent slopes	B	None	---	---	>6.0	---	---	>60	---	High	Low.
Calabasas, 0 to 2 percent slopes	B	Rare	---	---	>6.0	---	---	>60	---	High	Low.
805*:											
Tanbark	D	None	---	---	>6.0	---	---	10-20	Hard	High	High.
Rayohill	C	None	---	---	>6.0	---	---	20-40	Hard	High	High.
812 Socorro	C	None	---	---	>6.0	---	---	20-40	Hard	High	Low.
814*:											
Puice	C	None	---	---	>6.0	---	---	20-40	Hard	High	Low.
Tanbark	D	None	---	---	>6.0	---	---	10-20	Hard	High	High.
Harvey	B	None	---	---	>6.0	---	---	>60	---	High	Low.
816*:											
Pirodel	B	None	---	---	>6.0	---	---	>60	---	High	Low.
Harvey	B	None	---	---	>6.0	---	---	>60	---	High	Low.
Pinon	D	None	---	---	>6.0	---	---	10-20	Hard	High	Low.
818 Mespun	A	None	---	---	>6.0	---	---	>60	---	Moderate	Low.
822 Pirodel	B	None	---	---	>6.0	---	---	>60	---	High	Low.
824 Pinon	D	None	---	---	>6.0	---	---	10-20	Hard	High	Low.

See footnote at end of table.

TABLE 13.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
826*:											
Harvey----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
Ildecarb---------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Pinon-----------	D	None--------	---	---	>6.0	---	---	7-20	Hard	High-----	Low.
828*:											
Cuate-----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	High-----	Moderate.
Tanbark---------	D	None--------	---	---	>6.0	---	---	10-20	Hard	High-----	High.
830*:											
Cuate-----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	High-----	Moderate.
Deama-----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	High-----	Low.
Tanbark---------	D	None--------	---	---	>6.0	---	---	10-20	Hard	High-----	High.
832--------------- Jornaham	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
834*:											
San Mateo--------	B	Frequent----	Very brief	Jul-Sep	>6.0	---	---	>60	---	High-----	Low.
Glenberg---------	B	Frequent----	Very brief	Apr-Aug	>6.0	---	---	>60	---	Moderate	Low.
836*:											
Rayohill---------	C	None--------	---	---	>6.0	---	---	20-40	Hard	High-----	High.
Clovis-----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.
838*:											
Tanbark---------	D	None--------	---	---	>6.0	---	---	10-20	Hard	High-----	High.
Rock outcrop.											
840*:											
Deama-----------	D	None--------	---	---	>6.0	---	---	8-20	Hard	Moderate	Low.
Rock outcrop.											
845*:											
Winona----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	High-----	Low.
Rock outcrop.											
850*:											
Creel------------	C	None--------	---	---	>6.0	---	---	20-40	Soft	High-----	Low.
Ponciano---------	C	None--------	---	---	>6.0	---	---	>60	---	High-----	Low.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--CLASSIFICATION OF THE SOILS

[An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series]

Soil name	Family or higher taxonomic class
Abrazo	Fine, mixed, mesic Aridic Argiustolls
Adelino Variant	Fine-loamy, mixed, thermic Typic Camborthids
Aftaden	Loamy, mixed, thermic Lithic Haplargids
Agua	Coarse-loamy over sandy or sandy-skeletal, mixed (calcareous), thermic Typic Torrifluvents
Akela	Loamy-skeletal, mixed (calcareous), thermic Lithic Torriorthents
Alicia	Fine-silty, mixed, mesic Ustollic Camborthids
*Anthony	Coarse-loamy, mixed (calcareous), thermic Typic Torrifluvents
Anthony Variant	Coarse-loamy over clayey, mixed (calcareous), thermic Typic Ustifluvents
Arizo	Sandy-skeletal, mixed, thermic Typic Torriorthents
Armendaris	Fine, mixed, thermic Ustollic Haplargids
Armijo	Fine, montmorillonitic, thermic Typic Torrerts
Augustine	Fine-loamy, mixed, mesic Aridic Haplustalfs
Barana	Fine-silty, mixed, thermic Ustollic Haplargids
Belen	Clayey over loamy, montmorillonitic (calcareous), thermic Vertic Torrifluvents
Berino	Fine-loamy, mixed, thermic Typic Haplargids
Bluepoint	Mixed, thermic Typic Torripsamments
Brazito	Mixed, thermic Typic Torripsamments
Bucklebar	Fine-loamy, mixed, thermic Typic Haplargids
Calabasas	Fine-silty, mixed, mesic Ustollic Camborthids
Caliza	Sandy-skeletal, mixed, thermic Typic Calciorthids
Caliza Variant	Fine-loamy over sandy or sandy-skeletal, mixed, thermic Typic Camborthids
Campana	Fine-loamy, mixed, thermic Calcic Gypsiorthids
Cascajo	Sandy-skeletal, mixed, mesic Ustollic Calciorthids
Claunch	Fine-loamy, mixed, mesic Calcic Gypsiorthids
Clovis	Fine-loamy, mixed, mesic Ustollic Haplargids
Courthouse Variant	Loamy-skeletal, mixed, (calcareous), thermic Lithic Torriorthents
Creel	Fine-loamy, mixed, mesic Ustollic Calciorthids
Cuate	Loamy-skeletal, carbonatic, mesic Aridic Calciustolls
Datil	Fine-loamy, mixed, mesic Aridic Argiustolls
Deama	Loamy-skeletal, carbonatic, mesic Lithic Calciustolls
Dean	Fine-loamy, carbonatic, mesic Ustollic Calciorthids
Deltajo	Fine-loamy, mixed, thermic Typic Calciorthids
Dioxice	Fine-loamy, mixed, mesic Aridic Calciustolls
Dona Ana	Fine-loamy, mixed, thermic Typic Haplargids
Elbutte	Clayey, mixed (calcareous), thermic, shallow Typic Torriorthents
Flaco	Fine-loamy, mixed, mesic Ustollic Haplargids
Gabaldon	Fine-silty, mixed, mesic Cumulic Haplustolls
*Gila	Coarse-loamy, mixed (calcareous), thermic Typic Torrifluvents
Glenberg	Coarse-loamy, mixed (calcareous), mesic Ustic Torrifluvents
*Glendale	Fine-silty, mixed (calcareous), thermic Typic Torrifluvents
Goldust	Clayey-skeletal, mixed, mesic Aridic Argiustolls
Guy	Coarse-loamy, mixed, mesic Aridic Calciustolls
Haploborolls, aridic	Haploborolls, aridic
Harvey	Fine-loamy, mixed, mesic Ustollic Calciorthids
Ildecarb	Loamy-skeletal, carbonatic, mesic Ustollic Calciorthids
Jornaham	Coarse-loamy, mixed, mesic Calcic Gypsiorthids
Laborcita	Fine-loamy, mixed, thermic Ustollic Calciorthids
Ladron	Loamy-skeletal, carbonatic, mesic Ustollic Calciorthids
La Fonda	Fine-loamy, mixed, mesic Ustollic Camborthids
Landavaso	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Aridic Argiustolls
Lapdun	Loamy-skeletal, carbonatic, mesic Aridic Calciustolls
Largo	Fine-silty, mixed (calcareous), thermic Typic Torriorthents
Lemitar	Loamy-skeletal, mixed, thermic Lithic Ustollic Haplargids
Lithic Torriorthents	Lithic Torriorthents
Loarc	Fine-loamy, mixed, mesic Aridic Argiustolls
Lozier	Loamy-skeletal, carbonatic, thermic Lithic Calciorthids
Magdalena	Clayey-skeletal, mixed, mesic Ustollic Paleargids
Majada	Loamy-skeletal, mixed, mesic Aridic Argiustolls
Manzano	Fine-loamy, mixed, mesic Cumulic Haplustolls
Mespun	Mixed, mesic Ustic Torripsamments
Millett	Fine-loamy, mixed, mesic Ustollic Haplargids
Mion	Clayey, mixed (calcareous), mesic, shallow Ustic Torriorthents

TABLE 14.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Motoqua	Loamy-skeletal, mixed, mesic Lithic Argiustolls
Musofare	Loamy-skeletal, mixed, mesic Ustollic Haplargids
*Navajo	Fine, mixed (calcareous), mesic Vertic Torrifluvents
Netoma	Coarse-loamy, gypsic, mesic Typic Gypsiorthids
*Nickel	Loamy-skeletal, mixed, thermic Typic Calciorthids
Nickel Variant	Loamy-skeletal, carbonatic, thermic Typic Calciorthids
Nolam	Loamy-skeletal, mixed, thermic Ustollic Haplargids
Oscura	Fine, mixed (calcareous), thermic Ustic Torrifluvents
Pajarito	Coarse-loamy, mixed, thermic Typic Camborthids
*Palma	Coarse-loamy, mixed, mesic Ustollic Haplargids
Pena	Loamy-skeletal, mixed, mesic Aridic Calciustolls
Penistaja	Fine-loamy, mixed, mesic Ustollic Haplargids
Pilabo	Loamy-skeletal, mixed, thermic Ustollic Camborthids
Pinon	Loamy, mixed, mesic Lithic Ustollic Calciorthids
Pirodel	Sandy, mixed, mesic Ustollic Calciorthids
Ponciano	Fine, mixed, mesic Ustollic Camborthids
Popotosa	Fine-loamy over sandy or sandy-skeletal, mixed (calcareous), thermic Typic Torrifluvents
Puertecito	Loamy-skeletal, mixed, mesic Lithic Ustollic Haplargids
Puice	Loamy-skeletal, carbonatic, mesic Ustollic Calciorthids
Rayohill	Coarse-loamy, gypsic, mesic Typic Gypsiorthids
*Rizozo	Loamy, mixed (calcareous), mesic Lithic Ustic Torriorthents
*Royosa	Mixed, mesic Typic Ustipsamments
Saneli	Clayey over sandy or sandy-skeletal, montmorillonitic (calcareous), thermic Vertic Torrifluvents
San Mateo	Fine-loamy, mixed (calcareous), mesic Ustic Torrifluvents
Sedillo	Loamy-skeletal, mixed, mesic Ustollic Haplargids
Socorro	Loamy-skeletal, carbonatic, mesic Ustollic Calciorthids
Sparank	Fine, mixed (calcareous), mesic Ustic Torrifluvents
Tanbark	Loamy, gypsic, mesic, shallow Ustic Torriorthents
Telescope	Coarse-loamy, mixed, mesic Aridic Ustochrepts
*Thunderbird	Fine, montmorillonitic, mesic Aridic Argiustolls
Torriorthents, ustic	Torriorthents, ustic
Travessilla	Loamy, mixed (calcareous), mesic Lithic Ustic Torriorthents
Turney	Fine-loamy, mixed, thermic Typic Calciorthids
Turney Variant	Fine-loamy, mixed, thermic Typic Calciorthids
Typic Camborthids	Typic Camborthids
Typic Ustifluvents	Typic Ustifluvents
Wink	Coarse-loamy, mixed, thermic Typic Calciorthids
Winona	Loamy-skeletal, carbonatic, mesic Lithic Ustollic Calciorthids
Yesum	Coarse-loamy, gypsic, thermic Typic Gypsiorthids

☆ U.S. GOVERNMENT PRINTING OFFICE : 1988 O - 183-516 : QL 3

NRCS Accessibility Statement

This document is not accessible by screen-reader software. 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@ftc.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.