

Pollinator Habitat Enhancement Plan

Land Owner Information

Name	Pat Producer	email	Producer@intrnt.com
Mailing Address	P.O. Box 1	Phone (Home)	509 111-1111
		(Work)	
City	Wenatchee	(Cell)	
State/Zip Code	WA, 99201		

Property Location/Information

Landowner(s) Name	Pat Producer	Farm Num.	100
		Tract Num.	100
Property Address	100 Gravel St.	County	Chelan
		Township	22N
City	Wenatchee	Range	20E
State/Zip Code	WA, 99201	Section(s)	35
Lat.		Operation Acres	7.25
Long.		Pollinator Acres	

Plan Author's (TSP) Contact Information

Name	Kim Planner	email	Planner@intrrnt.com
TSP ID#			
Mailing Address	P.O. Box 1	Phone (Home)	509-555-1212
		(Work)	
City	Spokane	(Cell)	
State/Zip Code	WA, 99201		

TSP Signature	Date
Landowner Signature	Date
NRCS Signature	Date

Pollinator Habitat Enhancement CAP

Table of Contents

1. Pollinator Habitat Enhancement CAP Outline
 - Definition
 - General Criteria
 - Existing Management Practices
 - Landowner Objectives
 - Landowner Desired Future Conditions
 - Identified Resource Concerns/Pollinator Limiting Factors
 - Record of Decision
 - Pesticide Risk Information/Mitigation
 - Deliverables for NRCS field office
 - Deliverables for Landowner
 - Appendix
2. Location Map
3. Soils Map and Report
4. Resource Inventory Map
5. Biology Technical Note #14 Evaluation Summary
6. Pollinator Habitat Assessment Form and Guide
7. One Half Mile Radius Map
8. Resource Concerns Checklist – Cropland
9. Resource Concerns Checklist – Landscape
10. Hedgerow Planting (422) Jobsheet & Plot Layout
11. Tree/Shrub Site Preparation (490) Jobsheet
12. Tree/Shrub Establishment (612) Jobsheet
13. Mulching (484) Jobsheet
14. Conservation Plan Map
15. Monitoring Form

Pollinator Habitat Enhancement Plan

This section establishes the minimum criteria to be addressed in the development of Pollinator Habitat Enhancement Plans

(Use of this form is optional)

A. Pollinator Habitat Enhancement Plan Definition:

A pollinator habitat enhancement plan is a site-specific conservation plan developed for a client that addresses the improvement, restoration, enhancement, or expansion of flower-rich habitat that supports native and/or managed pollinators. (See appendix for complete definition)

B. General Criteria (see appendix)

C. Document existing management practices and activities on cropped and non-cropped portions of the property.

Management Unit (see map)	Land use	Crops and/or Farming/Management Practices
Orchard 1	Cherry orchard	Cherries – Irrigation Water Mgt. (449), Nutrient Mgt. (590), Pest Mgt. (595),
Orchard 2	Cherry orchard	Cherries – Irrigation Water Mgt. (449), Nutrient Mgt. (590), Pest Mgt. (595),
Assoc. Ag Land-South	none	Pest Mgt. (595)
Assoc. Ag Land-North	none	Pest Mgt. (595)

Additional operation/management comments

D. Location Map

- a. Provide a map showing location of planning unit.

E. Soils Map/Descriptions

- a. Provide a soils map of the planning unit. A soils map can be obtained at the **Web Soils Survey** website (websoilsurvey.nrcs.usda.gov/). Include a soil report generated from the Web Soil Survey website.
 - i. Where available, include an ecological site map with descriptions.

Pollinator Habitat Enhancement Plan

F. Resource Inventory/Map

- a. Provide a resource inventory map, include the following: scale, north arrow, field boundaries, streams, surface waters, wetlands, structures, land uses, etc.
- b. Describe current vegetation and use for each area within the planning unit. Also include:
 - i. Identified Resource Concerns for each field/land unit (see Step J below).
 - ii. Identify and indicate size (acres) of potential pollinator habitat.
 - iii. Describe pollinator habitat on nearby (within ½ mile) land.

G. Landowner Objectives

- Improve pollination service provided by managed and wild (unmanaged) bees by increasing floral diversity and ensuring continuous and diverse bloom.
- Increase abundance of beneficial insects important for pest management .
- Improve wildlife habitat
-

Example Objectives (see appendix)

H. Desired Future Conditions/Goals (see appendix for more examples)

Example - The plant species composition benefits a diverse pollinator community, i.e. 5 – 9 species of flowering plants blooming throughout the growing season. (See *WA Biology Technical Note No. 24, Plants for Pollinators in the Inland Northwest*, located in the *eFOTG Section 1/Reference lists/Technical Notes by Discipline/Biology* folder for guidance on appropriate species and number of species for your area.)

Goal	Desired Future Condition/Goal
1.	The plant species composition benefits a diverse pollinator community, i.e. 5-9 species of flowering plants blooming throughout the growing season.
2.	Minimal weed competition.
3.	Areas of undisturbed pollinator habitat are available
4.	A good, clean water source for honey bees.

- I. **Assess Aquatic and Terrestrial Wildlife Habitat** – Use **Biology Technical Note 14** to evaluate wildlife habitat. This can be found in *eFOTG, Section 1/Reference Lists/Technical Notes by Discipline/Biology* folder.

Pollinator Habitat Enhancement Plan

- J. Assess Pollinator Habitat – Use the [Xerces Pollinator Habitat Assessment Form and Guide](#) to evaluate the condition of pollinator habitat in the planning unit. This can be found in *eFOTG, Section III/Conservation Activity Plans (CAPs) Technical Criteria/146 – Pollinator Habitat Plan*

Enter Scores from Pollinator Habitat Assessment Form	Before	After
Section 1: Landscape Features (max score 20)	10	
Section 2: Farmscape Features (max score 35)	5	
Section 3: Foraging Habitat (max score 40)	16	
Section 4: Nesting Habitat (max score 38)	14	
Section 5: Farm Practices (max score 80)	25	
Overall Score	70	

- Is There a [Resource Concern](#)? –Concerning pollinators is there **Inadequate Habitat for Fish & Wildlife** (i.e. is the “Before” score **less than 100**)? YES NO

- K. Assess other Resource Concerns using the *Resource Concern Checklists (use appropriate land use checklist and Landscape checklist) in eFOTG, see Section III/Resource Concerns* folder. (Note – Pollinators are wildlife and pollinator habitat is within the resource concern Inadequate Habitat for Fish and Wildlife.)

Identify the Pollinator Limiting Factor(s) and other Resource Concerns and list practices that address these factors/Resource Concerns.

Limiting Factor (e.g. Foraging Habitat) & Resource Concerns	Alternative 1 Practices*	Alternative 2 Practices*
Section 2, Little natural habitat on farm	645, Upland Wildlife Habitat Mgt. 327, Conservation Cover 315 Herbaceous Weed Control	422, Hedgerow Planting 484, Mulching 490, Tree and Shrub Site Preparation 612, Tree/Shrub Establishment
Section 3, Foraging Habitat	See above	See above
Section 4, Sites for wood nesting bees	Create brush piles	Include 20 elderberry shrubs in the 612, Tree/Shrub Establishment. Elderberry shrubs won't be planted in the hedgerow but in watered areas.

* See Appendix for list of appropriate practices.

Pollinator Habitat Enhancement Plan

L. Record of Decision (List practices and reason for choosing practices)

Alternative 2 is selected. Alternative 2 is selected because of landowner preference and the use of shrub species. In addition to species for the 9-12 inch precip environment 20 elderberry shrubs will be planted in watered areas (see map) to provide a source of pithy twigs for wood and cavity nesting bees. The elderberry plantings are not cost shared.

M. Schedule of Operations – Attach a copy of the Schedule of Operations. Schedule should include practices to be applied, land unit and number of acres to which the practices are applied, date when the practices are to be applied.

- a. Include a contingency plan for harsh winter conditions, drought, fire, flooding, and other extraordinary events.

N. Conservation Practice Job Sheets – Include site specific NRCS job sheets for each practice in the conservation plan.

- a. Use WA *Biology Technical Note No. 24, Plants for Pollinators in the Inland Northwest*, located in the *eFOTG Section I/Reference lists/Technical Notes by Discipline/Biology* folder for guidance on appropriate [plant](#) species and [required](#) number of species for your area.)
- b. Conservation practice Job Sheets and Specification Guide Sheets are available in *eFOTG Section IV* in the Washington Conservation Practices folder.
- c. On the Job Sheets include [Operation and Maintenance](#) activities for each practice.

O. Conservation Plan Map

- a. Provide a conservation plan map, include the following: scale, north arrow, Landowner, planned and existing boundaries, fields, streams, surface waters, wetlands, structures, land uses, etc.
- b. Locate, identify and indicate size (acres) of planned conservation practices on map (use appropriate map symbols).

P. Pesticide Risk (Information used to develop a Pesticide Risk Mitigation Plan, i.e. management practices to reduce hazards for pollinator populations.)

1. Soils:

Colockum silt loam 15-25% and Colockum silt loam 25-45%

Pollinator Habitat Enhancement Plan

2. Identify Pollinator Resource Concern:

Pollinators (especially bees) are essential for the production of cherries.

3. Pesticides, Formulations & adjuvants, rates and pests:

Dimethoate (44 oz/ac), Endosulfan (122 oz/ac), Carbaryl (256 oz/ac) – Black cherry aphid, Western cherry fruit fly.

Spinetoram (7 oz/ac) – Redhumped caterpillar, Spotted wing drosophila, Western cherry fruit fly

Imidacloprid (8 oz/ac) – Western cherry fruit fly, grape mealybug, white apple leafhopper

sulfur (306 oz/ac) – Spider mite

myclobutanil (15 oz/ac) fungicide - Brown rot, Powdery mildew, blossom blight

azinphos-methyl (23 oz/ac) – cherry fruit fly

Chlorpyrifos (128 oz/ac) – peach twig borer

Omni Oil Supreme Spray (oil)

Nu film 17 sticker-extender

Triflumizole (24 oz/ac) fungicide - Cylindrocladium root and petiole rot

boscalid + pyraclostrobin (24 oz/ac) fungicide – blossom boscalid blight, shot hole, brown rot

calcium polysulfides fungicide – powdery mildew

copper hydroxide (122 oz/ac) – coryneum blight, bacterial canker

Quinoxifen (7 oz/ac) fungicide – powdery mildew

4. Application method, timing, and equipment

Pesticide applications are done in the early mornings.

5. Management Practices

Q. Monitoring and Record Keeping – Provide the “Pollinator Habitat Enhancement Monitoring Form” located in *eFOTG/Section III/Conservation Activity Plans (CAPs) Technical Criteria/146 Pollinator Habitat Plan* to the landowner.

Pollinator Habitat Enhancement Plan

R. Deliverables for NRCS Field Office

- a. Complete hardcopy and electronic copy of the client's plan (MS Word copy) and other applicable digital support documents.
- b. Digital Conservation Plan Map with fields, features, and structural practices located.
- c. Digital Soils Map.

S. Deliverables for landowner

- a. Hardcopy or electronic copy, depending on landowner's preference, of the complete plan. Include all maps, inventory/analysis, alternatives, decisions, Schedule of operations, jobsheets, etc. (i.e. all items identified in this guide).

Pollinator Habitat Enhancement Plan

Appendix

Definition

A pollinator habitat enhancement plan is a site-specific conservation plan developed for a client that addresses the improvement, restoration, enhancement, or expansion of flower-rich habitat that supports native and/or managed pollinators.

The pollinator habitat enhancement plan will:

- a. Meet NRCS quality criteria for soil erosion control, water quality, soil quality, plant condition, fish and wildlife, rangeland/pasture/grazed woodland health and productivity, and other identified resource concerns.
- b. Comply with federal, state, tribal, and local laws, regulations, and permit requirements.
- c. Meet the client's objectives.

General Criteria

A Pollinator Habitat Enhancement Plan shall be developed by certified Technical Service Providers (TSP's). In accordance with Section 1240 (A), the Environmental Quality Incentive Program (EQIP) program provides funding support through contracts with eligible producers to obtain services of certified TSP's for development of Pollinator Habitat Enhancement Plans. The 3 specific TSP criteria required for Pollinator Habitat Enhancement Plan development is located on the TSP registry (TechReg) web site at:
<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/tsp>

Example Objectives :

- Improve pollination service provided by wild (unmanaged) bees by:
 - o Increasing floral diversity and ensuring continuous and diverse bloom,
 - o Increasing undisturbed habitat/ground (including the creation of alkali or other ground-nesting bee beds),
 - o Increasing nesting opportunities for tunnel-nesting bees, and
 - o Providing pollinator refugia.
- Improve pollination service provided by managed bees by:
 - o Increasing floral diversity and ensuring continuous and diverse bloom,
 - o Providing readily accessible clean water
- Increasing diversity and availability of butterfly host plants.
- Increase abundance of beneficial insects important for pest management
- Improve cost efficiency (e.g. removal of marginal crop land from production and/or improvement of produce quality from enhanced pollination).
- Maintain or improve wildlife habitat.
- Maintain or improve water quality.
- Prevent or reduce erosion.

Pollinator Habitat Enhancement Plan

- Beautify the landscape.
- Provide pollinator populations with refuge from pesticides.
- Change or adjust pesticide use to reduce hazards for pollinator populations.

Example Desired Future Conditions/Goals

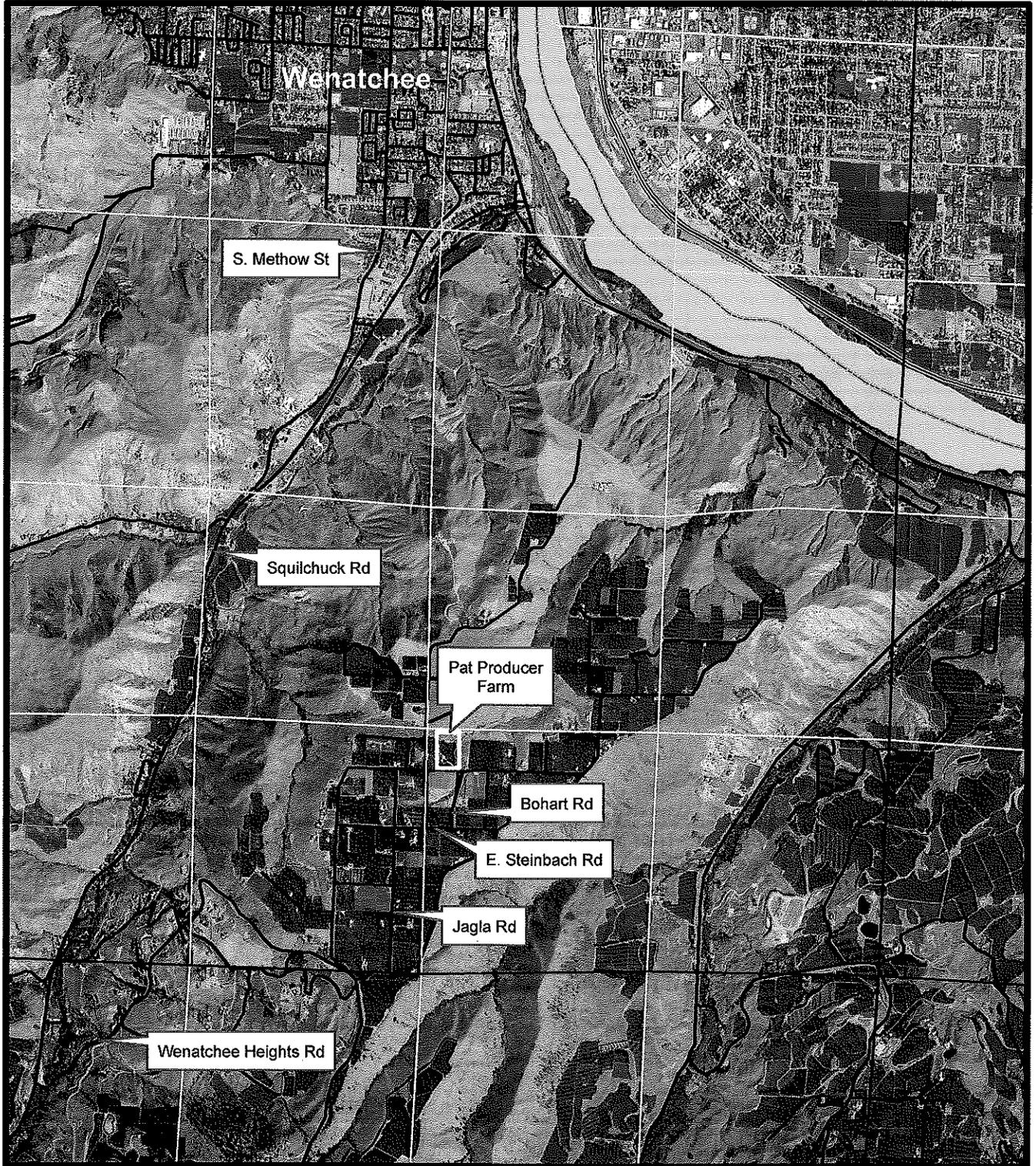
1. The plant species composition benefits a diverse pollinator community, i.e. 5 – 9 species of flowering plants blooming throughout the growing season. (See *WA Biology Technical Note No. 24, Plants for Pollinators in the Inland Northwest*, located in the *eFOTG Section I/Reference lists/Technical Notes by Discipline/Biology* folder.)
 - a. If the planting is designed to support insect-pollinated agriculture, then:
 - i. Minimize bloom competition with insect-pollinated crops (if this is a concern of the client), and
 - ii. Avoid plants that may serve as crop pest or disease hosts.
2. There is minimal weed completion, but the inclusion, where appropriate, of beneficial “weeds” (e.g. milkweed as Monarch butterfly host plants).
3. Large areas of undisturbed pollinator habitat are available:
 - a. No tillage in areas appropriate for ground-nesting bees
 - b. Overgrown bunchgrass for bumble bee nest sites
 - c. Host plants for butterflies
 - d. Tree cavities, standing dead trees, exfoliating bark (e.g., in riparian or adjacent land) for wood-nesting bees.
4. Adequate clean water source(s) for honey bees

Conservation Practices for Pollinator Habitat Enhancement*

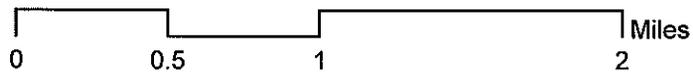
Code	Practice Name
327	Conservation Cover
340	Cover Crop
342	Critical Area Planting
386	Field Border
390	Riparian Herbaceous Cover
391	Riparian Forest Buffer
393	Filter Strip
422	Hedgerow Planting
595	Integrated Pest Management
643	Rare and Declining Habitat
645	Upland Wildlife Habitat Management

* Other practices may be used as well

Pollinator Habitat Enhancement CAP Pat Producer Location Map



May 2013





A product 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
participants

Custom Soil Resource Report for Chelan County Area, Washington (Parts of Chelan and Kittitas Counties)



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://soils.usda.gov/sqi/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrsc>) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. 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.

The National Cooperative Soil Survey is 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 Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

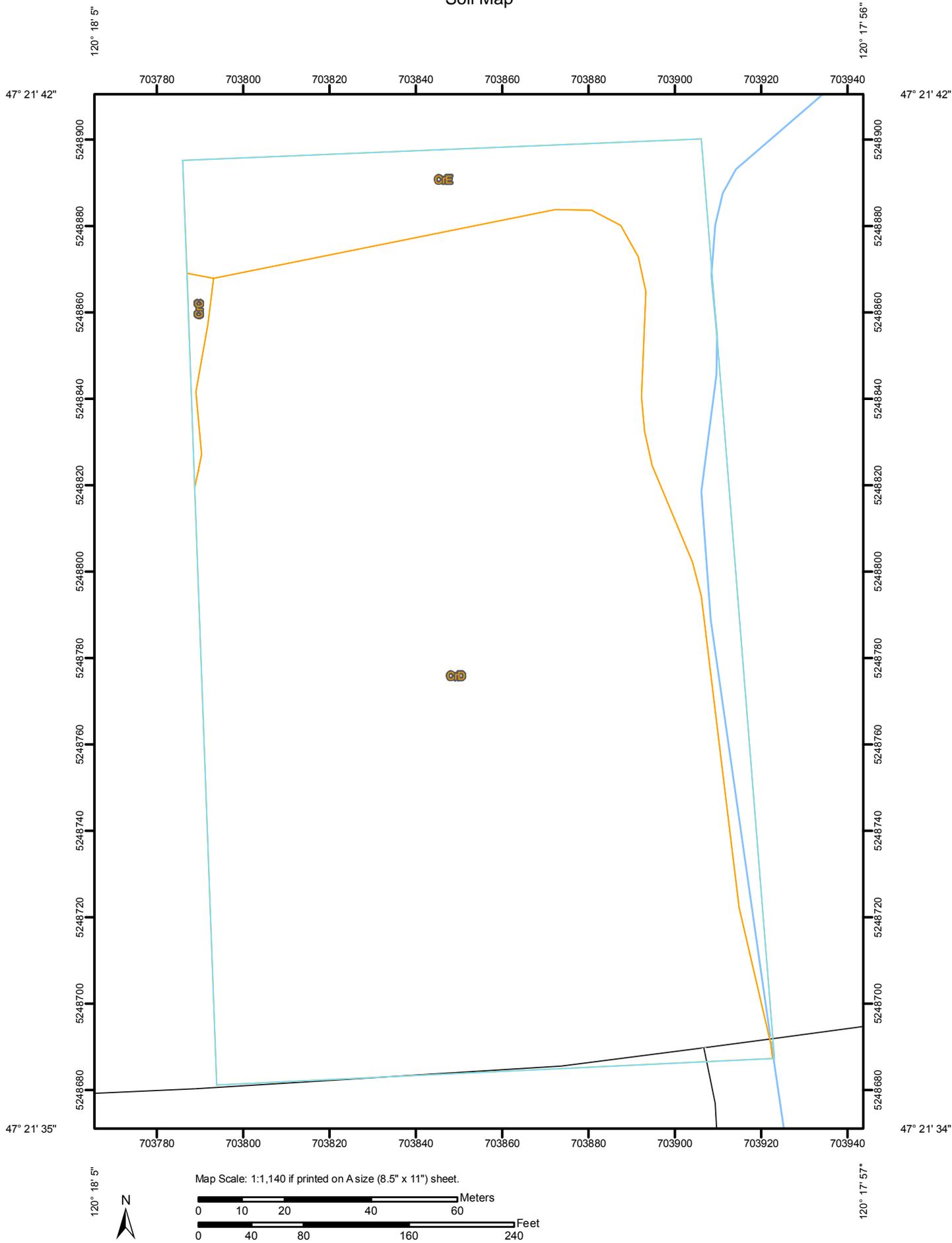
Contents

Preface	2
Soil Map	5
Soil Map.....	6
Legend.....	7
Map Unit Legend.....	8
Map Unit Descriptions.....	8
Chelan County Area, Washington (Parts of Chelan and Kittitas Counties) . . .	10
CrC—Colockum silt loam, 8 to 15 percent slopes.....	10
CrD—Colockum silt loam, 15 to 25 percent slopes.....	10
CrE—Colockum silt loam, 25 to 45 percent slopes.....	11
Soil Information for All Uses	13
Suitabilities and Limitations for Use.....	13
Land Classifications.....	13
Ecological Site Name: NRCS Rangeland Site.....	13
Ecological Site Name: NRCS Rangeland Site.....	17

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:1,140 if printed on A size (8.5" x 11") sheet.



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot

 Very Stony Spot

 Wet Spot

 Other

Special Line Features

-  Gully
-  Short Steep Slope
-  Other

Political Features

 Cities

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

Map Scale: 1:1,140 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Chelan County Area, Washington (Parts of Chelan and Kittitas Counties)
 Survey Area Data: Version 8, Jun 28, 2012

Date(s) aerial images were photographed: 7/1/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Chelan County Area, Washington (Parts of Chelan and Kittitas Counties) (WA607)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CrC	Colockum silt loam, 8 to 15 percent slopes	0.0	0.5%
CrD	Colockum silt loam, 15 to 25 percent slopes	5.5	82.9%
CrE	Colockum silt loam, 25 to 45 percent slopes	1.1	16.6%
Totals for Area of Interest		6.6	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils 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 minor components that belong to taxonomic classes other than those of the major soils.

Most minor 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, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. 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. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components 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 minor components 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 landforms or landform segments that have similar use and management requirements. The delineation of such segments

Custom Soil Resource Report

on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, 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, slope, stoniness, salinity, 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, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

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

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. Alpha-Beta complex, 0 to 6 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. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Chelan County Area, Washington (Parts of Chelan and Kittitas Counties)

CrC—Colockum silt loam, 8 to 15 percent slopes

Map Unit Setting

Elevation: 1,000 to 3,200 feet

Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 110 to 165 days

Map Unit Composition

Colockum and similar soils: 100 percent

Description of Colockum

Setting

Landform: Hillslopes, mountain slopes

Parent material: Colluvium from sandstone or basalt with loess and volcanic ash in the upper part

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 35 percent

Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)

Available water capacity: High (about 9.3 inches)

Interpretive groups

Farmland classification: Farmland of unique importance

Land capability classification (irrigated): 4e

Land capability (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 12 inches: Silt loam

12 to 26 inches: Silt loam

26 to 47 inches: Silty clay loam

47 to 60 inches: Very gravelly silty clay loam

CrD—Colockum silt loam, 15 to 25 percent slopes

Map Unit Setting

Elevation: 1,000 to 3,200 feet

Mean annual precipitation: 12 to 16 inches

Custom Soil Resource Report

Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 110 to 165 days

Map Unit Composition

Colockum and similar soils: 100 percent

Description of Colockum

Setting

Landform: Hillslopes, mountain slopes

Parent material: Colluvium from sandstone or basalt with loess and volcanic ash in the upper part

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 35 percent

Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)

Available water capacity: High (about 9.3 inches)

Interpretive groups

Farmland classification: Farmland of unique importance

Land capability classification (irrigated): 6e

Land capability (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 12 inches: Silt loam

12 to 26 inches: Silt loam

26 to 47 inches: Silty clay loam

47 to 60 inches: Very gravelly silty clay loam

CrE—Colockum silt loam, 25 to 45 percent slopes

Map Unit Setting

Elevation: 1,000 to 3,200 feet

Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 110 to 165 days

Map Unit Composition

Colockum and similar soils: 100 percent

Description of Colockum

Setting

Landform: Hillslopes, mountain slopes

Parent material: Colluvium from sandstone or basalt with loess and volcanic ash in the upper part

Properties and qualities

Slope: 25 to 45 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 35 percent

Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)

Available water capacity: High (about 9.3 inches)

Interpretive groups

Farmland classification: Not prime farmland

Land capability (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: LOAMY 10-16 PZ (R008XY102WA)

Typical profile

0 to 12 inches: Silt loam

12 to 26 inches: Silt loam

26 to 47 inches: Silty clay loam

47 to 60 inches: Very gravelly silty clay loam

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Ecological Site Name: NRCS Rangeland Site

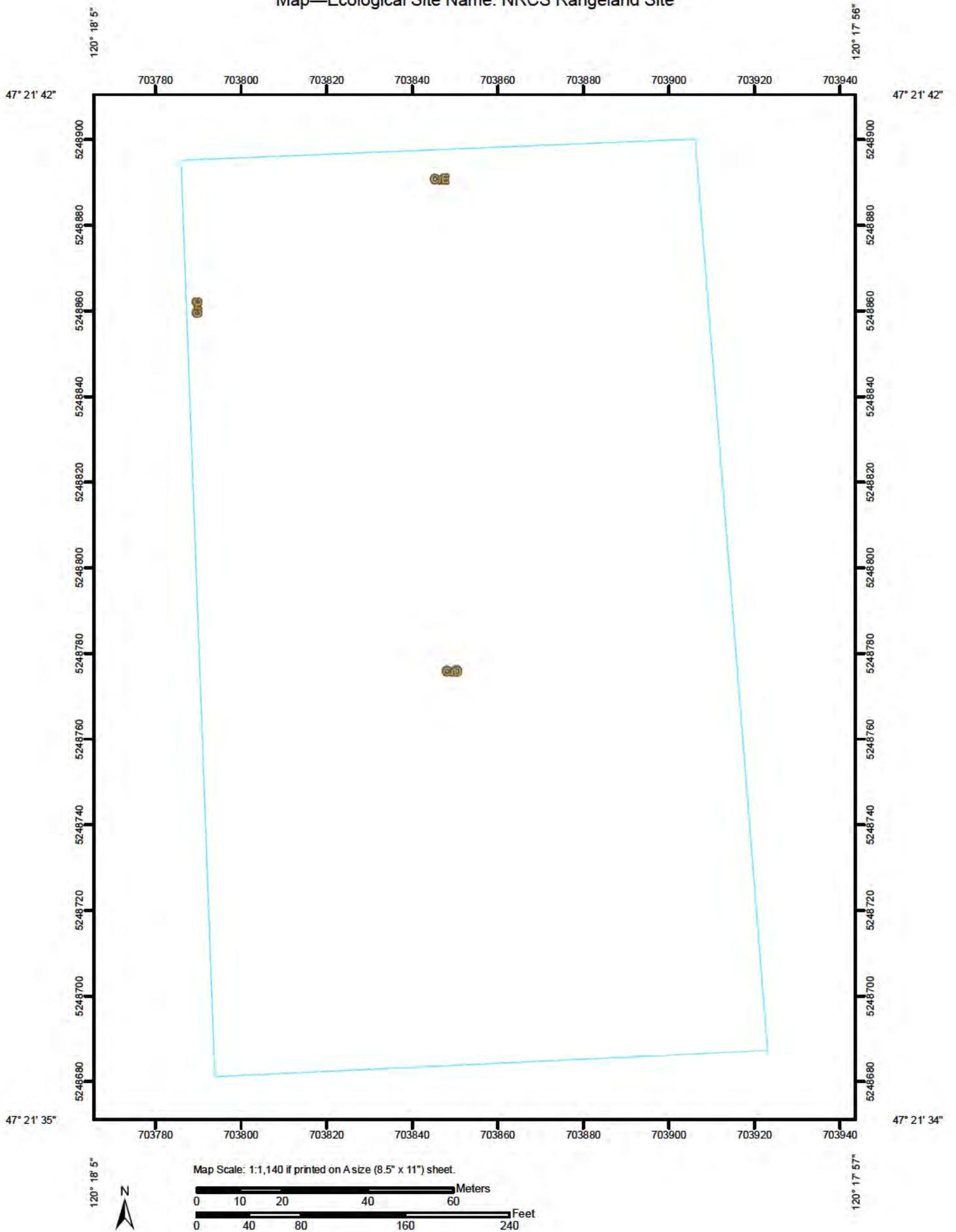
An ecological site name provides a general description of a particular ecological site. For example, "Loamy Upland" is the name of a rangeland ecological site. An "ecological site" is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. For example, the hydrology of the site is influenced by development of the soil and plant community. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service. Descriptions of those displayed in this map and summary table may also be accessed through the Ecological Site Assessment tab in Web Soil Survey.

Ecological sites and their respective unique set of characteristics are uniquely identified by the Ecological Site ID. The same Ecological Site Name may be assigned

Custom Soil Resource Report

to multiple Ecological Site IDs. If you wish to display a map of unique ecological sites, it is recommended that you select the Ecological Site ID attribute from the choice list.

Custom Soil Resource Report
Map—Ecological Site Name: NRCS Rangeland Site



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units

Soil Ratings

 LOAMY 10-16 PZ

 Not rated or not available

Political Features

 Cities

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

MAP INFORMATION

Map Scale: 1:1,140 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Chelan County Area, Washington (Parts of Chelan and Kittitas Counties)
Survey Area Data: Version 8, Jun 28, 2012

Date(s) aerial images were photographed: 7/1/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Ecological Site Name: NRCS Rangeland Site

Ecological Site Name: NRCS Rangeland Site— Summary by Map Unit — Chelan County Area, Washington (Parts of Chelan and Kittitas Counties) (WA607)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CrC	Colockum silt loam, 8 to 15 percent slopes	LOAMY 10-16 PZ	0.0	0.5%
CrD	Colockum silt loam, 15 to 25 percent slopes	LOAMY 10-16 PZ	5.5	82.9%
CrE	Colockum silt loam, 25 to 45 percent slopes	LOAMY 10-16 PZ	1.1	16.6%
Totals for Area of Interest			6.6	100.0%

Rating Options—Ecological Site Name: NRCS Rangeland Site

Class: NRCS Rangeland Site

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Ecological Site Name: NRCS Rangeland Site

An ecological site name provides a general description of a particular ecological site. For example, "Loamy Upland" is the name of a rangeland ecological site. An "ecological site" is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. For example, the hydrology of the site is influenced by development of the soil and plant community. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service. Descriptions of those displayed in this map and summary table may also be accessed through the Ecological Site Assessment tab in Web Soil Survey.

Ecological sites and their respective unique set of characteristics are uniquely identified by the Ecological Site ID. The same Ecological Site Name may be assigned to multiple Ecological Site IDs. If you wish to display a map of unique ecological sites, it is recommended that you select the Ecological Site ID attribute from the choice list.

Pollinator Habitat Enhancement CAP Resource Inventory Map



Pat Producer

60 30 0 60 Meters



Natural Resources Conservation Service

WASHINGTON

Biology Technical Note # 14 Wildlife
Habitat Evaluation Guide

Evaluation Summary

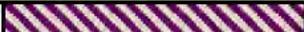
Table of Contents

Revised January 2013

Client/Operating Unit: **Pat Producer**
 Farm/Ranch Location: **T22N, R20E, Sec 35**
 Evaluation Date: **3/1/2013**
 Planner: **Kim Planner**

Tract Number: **100**
 Farm Number: **100**
 Field Number(s): **see map**
 Program: **NA**

*P.C. = Planning Criteria

Cropland & Hayland (Planning Criteria = 40%)				Present	P.C.*	No Action	P.C.	Planned A	P.C.	Planned B	P.C.
Distance to Undisturbed Cover				80%	Meets PC	80%	Meets PC	100%	Meets PC	100%	Meets PC
Crop Rotation and Plant Residue Cover				63%	Meets PC	63%	Meets PC	75%	Meets PC	75%	Meets PC
Average Residue on Cropland After Planting				63%	Meets PC	100%	Meets PC	100%	Meets PC	100%	Meets PC
Wildlife Drinking Water				100%	Meets PC	100%	Meets PC	100%	Meets PC	100%	Meets PC
Habitat Fragmentation						100%	Meets PC	100%	Meets PC	100%	Meets PC
Nutrient Management				100%	Meets PC	100%	Meets PC	100%	Meets PC	100%	Meets PC
Integrated Pest Management				100%	Meets PC	100%	Meets PC	100%	Meets PC	100%	Meets PC
Weed Control				100%	Meets PC	100%	Meets PC	100%	Meets PC	100%	Meets PC
Acres:	6.9		Score:	86%	Meets PC	93%	Meets PC	97%	Meets PC	97%	Meets PC

Rangeland (Planning Criteria = 60%)				Present	P.C.	No Action	P.C.	Planned A	P.C.	Planned B	P.C.
Wildlife Food Source				33%	Below PC	17%	Below PC	67%	Meets PC	67%	Meets PC
Grazing System				33%	Below PC	33%	Below PC	100%	Meets PC	100%	Meets PC
Plant Community				67%	Meets PC	67%	Meets PC	67%	Meets PC	67%	Meets PC
Wildlife Drinking Water				75%	Meets PC	75%	Meets PC	75%	Meets PC	75%	Meets PC
Habitat Fragmentation											
Nutrient Management				33%	Below PC	33%	Below PC	100%	Meets PC	100%	Meets PC
Integrated Pest Management				100%	Meets PC	100%	Meets PC	100%	Meets PC	100%	Meets PC
Weed Control				33%	Below PC	33%	Below PC	100%	Meets PC	100%	Meets PC
Acres:	2542.1		Score:	33%	Below PC	17%	Below PC	87%	Meets PC	87%	Meets PC

[BACK TO TOP](#)

Pastureland (Planning Criteria = 50%)				Present	P.C.	No Action	P.C.	Planned A	P.C.	Planned B	P.C.
Harvesting System				25%	Below PC	25%	Below PC	50%	Meets PC	50%	Meets PC
Distance to Undisturbed Cover				40%	Below PC	40%	Below PC	80%	Meets PC	100%	Meets PC
Plant Diversity				25%	Below PC	25%	Below PC	50%	Meets PC	100%	Meets PC
Pasture Corridors				13%	Below PC	13%	Below PC	75%	Meets PC	100%	Meets PC
Wildlife Drinking Water				50%	Meets PC	50%	Meets PC	50%	Meets PC	50%	Meets PC
Nutrient Management				33%	Below PC	33%	Below PC	100%	Meets PC	100%	Meets PC
Integrated Pest Management				33%	Below PC	33%	Below PC	100%	Meets PC	100%	Meets PC
Weed Control				100%	Meets PC	100%	Meets PC	100%	Meets PC	100%	Meets PC
Acres:	189.5		Score:	13%	Below PC	13%	Below PC	76%	Meets PC	88%	Meets PC

Upland Woodland (Planning Criteria = 60%)				Present	P.C.	No Action	P.C.	Planned A	P.C.	Planned B	P.C.
Forest Diversity				50%	Below PC	50%	Below PC	67%	Meets PC	100%	Meets PC
Grazing System				33%	Below PC	33%	Below PC	67%	Meets PC	100%	Meets PC
Downed Woody Material				67%	Meets PC	67%	Meets PC	67%	Meets PC	100%	Meets PC
Snags				75%	Meets PC	75%	Meets PC	75%	Meets PC	75%	Meets PC
Forest Openings				33%	Below PC	33%	Below PC	67%	Meets PC	100%	Meets PC
Wildlife Drinking Water				17%	Below PC	17%	Below PC	100%	Meets PC	100%	Meets PC
Habitat Fragmentation				70%	Meets PC	70%	Meets PC	100%	Meets PC	100%	Meets PC
Integrated Pest Management				33%	Below PC	33%	Below PC	100%	Meets PC	100%	Meets PC
Weed Control				33%	Below PC	33%	Below PC	100%	Meets PC	100%	Meets PC
Forest Management Plan				33%	Below PC	33%	Below PC	100%	Meets PC	100%	Meets PC
Acres:	5213.8		Score:	17%	Below PC	17%	Below PC	84%	Meets PC	98%	Meets PC

[BACK TO TOP](#)



Riparian Area (Left Bank) (Planning Criteria =70%)		Present	P.C.	No Action	P.C.	Planned A	P.C.	Planned B	P.C.
Riparian Width									
Site Index Height									
Bank Stability									
Grazing System									
Plant Community									
Snags									
Downed Woody Material									
Habitat Fragmentation									
Nutrient Management									
Integrated Pest Management									
Weed Control									
Acres:		Score:							
Riparian Area (Right Bank) (Planning Criteria =70%)		Present	P.C.	No Action	P.C.	Planned A	P.C.	Planned B	P.C.
Riparian Width									
Site Index Height									
Bank Stability									
Grazing System									
Plant Community									
Snags									
Downed Woody Material									
Habitat Fragmentation									
Nutrient Management									
Integrated Pest Management									
Weed Control									
Acres:		Score:							
Wetland (Planning Criteria =70%)		Present	P.C.	No Action	P.C.	Planned A	P.C.	Planned B	P.C.
Water Regime									
Plant Diversity									
Grazing System									
Acres:	34.9 	Score:							

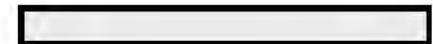
[BACK TO TOP](#)



Ponds & Small Lakes (Planning Criteria =70%)				Present	P.C.	No Action	P.C.	Planned A	P.C.	Planned B	P.C.
Water Quality											
Substrate											
Cover											
Water Withdrawals / Water Quantity											
Acres:	3.6		Score:								
Stream SVAP II (Planning Criteria =70%)				Present	P.C.	No Action	P.C.	Planned A	P.C.	Planned B	P.C.
Channel Condition											
Hydrologic Alteration											
Bank Condition (Left Bank)											
Bank Condition (Right Bank)											
Bank Condition (Average)											
Riparian Area Quantity (Left Bank)											
Riparian Area Quantity (Right Bank)											
Riparian Area Quantity (Average)											
Riparian Area Quality (Left Bank)											
Riparian Area Quality (Right Bank)											
Riparian Area Quality (Average)											
Canopy Cover (Check Cold or Warm)											
Water Appearance											
Nutrient Enrichment											
Manure or Human Waste											
Pools (Check High or Low)											
Barriers to Movement											
Fish Habitat Complexity											
Aquatic Invertebrate Habitat											
Aquatic Invertebrate Community											
Riffle Embeddedness*											
Salinity*											
Acres:			Score:								

* Elements in tan (Riffle Embeddedness & Salinity) are optional.

[BACK TO TOP](#)



Present Condition:

Habitat Type	Habitat Type Score	Score Times Acres	Acres	Equals	Weighted Score	Evaluation Area Score
Cropland & Hayland	86%	X	6.9	=	5.96	Meets PC
Rangeland	33%	X	2,542.1	=	847.37	Below PC
Pastureland	13%	X	189.5	=	23.69	Below PC
Upland Woodland	17%	X	5,213.8	=	868.97	Below PC
Riparian (Left Bank)		X		=		
Riparian (Right Bank)		X		=		
Wetland		X	34.9	=		
Ponds & Small Lakes		X	3.6	=		
Stream (SVAP II)		X		=		
WARNING PRESENT CONDITION IS BELOW THE PC		Totals:	7,990.8 Ac.	=	22%	Below PC

*P.C. = Planning Criteria

No Action:

Habitat Type	Habitat Type Score	Score Times Acres	Acres	Equals	Weighted Score	Evaluation Area Score
Cropland & Hayland	93%	X	6.9	=	6.40	Meets PC
Rangeland	17%	X	2,542.1	=	423.68	Below PC
Pastureland	13%	X	189.5	=	23.69	Below PC
Upland Woodland	17%	X	5,213.8	=	868.97	Below PC
Riparian (Left Bank)		X		=		
Riparian (Right Bank)		X		=		
Wetland		X	34.9	=		
Ponds & Small Lakes		X	3.6	=		
Stream (SVAP II)		X		=		
WARNING PRESENT CONDITION IS BELOW THE PC		Totals:	7,990.8 Ac.	=	17%	Below PC

*P.C. = Planning Criteria



Planned A:

Habitat Type	Habitat Type Score	Score Times Acres	Acres	Equals	Weighted Score	Evaluation Area Score
Cropland & Hayland	97%	X	6.9	=	6.68	Meets PC
Rangeland	87%	X	2,542.1	=	2209.21	Meets PC
Pastureland	76%	X	189.5	=	143.31	Meets PC
Upland Woodland	84%	X	5,213.8	=	4388.28	Meets PC
Riparian (Left Bank)		X		=		
Riparian (Right Bank)		X		=		
Wetland		X	34.9	=		
Ponds & Small Lakes		X	3.6	=		
Stream (SVAP II)		X		=		
		Totals:	7,990.8 Ac.	=	84%	Meets PC

*P.C. = Planning Criteria

Planned B:

Habitat Type	Habitat Type Score	Score Times Acres	Acres	Equals	Weighted Score	Evaluation Area Score
Cropland & Hayland	97%	X	6.9	=	6.68	Meets PC
Rangeland	87%	X	2,542.1	=	2209.21	Meets PC
Pastureland	88%	X	189.5	=	165.81	Meets PC
Upland Woodland	98%	X	5,213.8	=	5083.46	Meets PC
Riparian (Left Bank)		X		=		
Riparian (Right Bank)		X		=		
Wetland		X	34.9	=		
Ponds & Small Lakes		X	3.6	=		
Stream (SVAP II)		X		=		
		Totals:	7,990.8 Ac.	=	93%	Meets PC

*P.C. = Planning Criteria

[BACK TO TOP](#)





THE XERCES SOCIETY
FOR INVERTEBRATE CONSERVATION

Native Bee Conservation

Pollinator Habitat

Assessment Form and Guide



January 2013

The Xerces Society for
Invertebrate Conservation

www.xerces.org

Native Bee Conservation Pollinator Habitat Assessment Form and Guide

Purpose

This tool is meant to help educate conservation planners and landowners, prioritize conservation actions, and quantify habitat or farm management improvements on a single farm. The goal of this tool is not to compare one farm with another. Rather, it is intended to help incorporate pollinator conservation into a whole farm plan and then document improvements in pollinator habitat resulting from specific actions and management practices. As with any tool of this nature, the evaluation and scoring practice can be a subjective process, and the usefulness of the tool is dependent upon the consistency of the evaluator. While the goal is to implement changes that will result in an increased final score, there may not always be a viable treatment for individual variables. The scoring goals outlined below in the instructions are general guidelines, but the capacity to reach or exceed these goals varies widely in different landscapes and may be refined by state NRCS offices for a more regionally specific pollinator habitat assessment guide.

Instructions

- This pollinator habitat assessment guide can be used in both orchard and field crop settings.
- The accompanying photos and notes will help you identify and assess some specific habitat features.
- An assessment should be done twice, once during the conservation planning process (before project implementation) and once after the plan has been implemented.
- Prior to conducting an assessment, print out aerial photos to help with site and landscape questions.
- Each item in the assessment should be given a score of 0 (not present) or the appropriate value from the “Score” column.
- Add up the scores to calculate a subtotal for each subsection (e.g., 4a. Sites for ground-nesting bees).
- In addition, add up subsection subtotals to get a total for each section. Transfer these figures into the summary table on page 3 to generate the overall score for each assessment.
- The post-implementation goal is hard to define for the country as a whole. Ideally, landowners should strive to achieve an overall score of at least 100, and an improvement of at least 40 points. If this is not possible for your region or cropping system, talk to your area biologist or planner for guidance.

Copyright © 2013 The Xerces Society for Invertebrate Conservation

628 NE Broadway, Ste. 200 Portland, OR 97232 • (855) 232-6639 • www.xerces.org

The Xerces Society is a nonprofit organization that protects wildlife through the conservation of invertebrates and their habitat. Established in 1971, the Society is at the forefront of invertebrate protection worldwide.

The Xerces Society is an equal opportunity employer.

ACKNOWLEDGEMENTS

Authors Staff of the Xerces Society’s Pollinator Conservation Program.

Editing and layout Jessa Guisse, Ashley Minnerath, Matthew Shepherd, and Hailey Walls.

Funding Support for the Xerces Society’s pollinator conservation program is provided by Aveda Earth Fund, Columbia Foundation, CS Fund, Disney Worldwide Conservation Fund, Elizabeth Ordway Dunn Foundation, Gaia Fund, McCune Charitable Foundation, Organic Farm Research Foundation, Organic Valley Farmers Advocating for Organics Fund, Panta Rhea Foundation, Sarah K. de Coizart Article TENTH Perpetual Charitable Trust, Sea World Busch Gardens Conservation Fund, The Richard and Rhoda Goldman Foundation, Turner Foundation, USDA Natural Resources Conservation Service, Whole Foods Market and their vendors, Whole Systems Foundation, and Xerces Society members.

Photo credits © Hannah Gaines: page 5 all. © Jennifer Hopwood: page 4-Bc. © Eric Mader: page 4-Tr; page 6-l, cr, r. © Matthew Shepherd: cover-BI, Br; page 4-TI, Tc, Bc. © Katharina Ullmann: page 6-cl. © Mace Vaughan: cover-T; page 4-Br.

Site Summary

Owner/Operator:		Pat Producer
County:		Chelan
Field Office:		Wenatchee
Planner:		Kim Planner
Date	Assessment Before Implementation (Existing Habitat):	May 20, 2013
	Assessment After Implementation:	
Location Description: The planning unit (farm) is about 7 ac. and is located about 2 miles south of Wenatchee. It is in the Wenatchee Heights area and is surrounded by orchards, rangeland, and wheat fields.		
Sketch of Site:		

Total Score for Habitat Assessment

The figures entered into this summary table will be calculated during completion of the assessment.

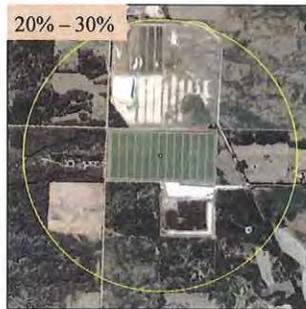
	Before	After
Section 1: Landscape Features (max score 20)	10	
Section 2: Farmscape Features (max score 35)	5	
Section 3: Foraging Habitat (max score 40)	16	
Section 4: Nesting Habitat (max score 38)	14	
Section 5: Farm Practices (max score 80)	25	
OVERALL SCORE	70	

Section 1: Landscape Features

1a. Percent of natural or semi-natural vegetation within ½ mile of project area (whether on or off farm). This land use cover includes, prairie, chaparral, woodlands or grasslands, riparian habitat and wetlands, suburban wooded areas, non-invasive weedy areas. It does NOT include lawn grass.

The photos below illustrate the different percent covers.

SELECT ONLY ONE	Score	Before	After	Treatment to increase score (no treatment if off farm)
>30%	10			
20% – 30%	7			
5% – 20%	3	3		
< 5%	0			
<i>Subtotal (1a)</i>		3		



1b. Dominant vegetation in non-cropped area within ½ mile of project area (whether on or off farm).

SELECT ONLY ONE	Score	Before	After	Treatment to increase score (no treatment if off farm)
Native plants	10			
Mix of native and naturalized (non-invasive) plants	7	7		
Naturalized flowering species (e.g., alfalfa)	5			
Invasive flowering weeds	0			
Sod-forming grasses	0			
<i>Subtotal (1b)</i>		7		

Landscape Features Total 10

(1a + 1b)

Section 2

2a. Percentage of farm that is in natural or semi-natural habitat (see 1a for examples)

SELECT ONLY ONE	Score	Before	After	Treatment to increase score
10% or more	10			plant native wildflowers and/or shrubs.
6% – 9%	7			
3% – 5%	5			
1% – 2%	3			
0%	0	0		
<i>Subtotal (2a)</i>		0		

Go to top of page 5

Section 2: Farmscape Features

2b. Additional farmscape features.

SCORE ALL OPTIONS THAT APPLY	Score	Before	After	Treatment to increase score
Permanent meadows with diverse wildflowers	5			
Buffers: 1 point for every 20% of area within 25 feet of water features (e.g. stream, irrigation ditch, pond, etc.) that is vegetated	0 - 5			
Hedgerows, windbreaks, or fencerows of diverse tree/shrub species	5			
Annual flowering cover crops, annual bee pasture, bolting crops	5	5		
Source of clean surface water (non-contaminated)	5			
<i>Subtotal (2b)</i>		5		

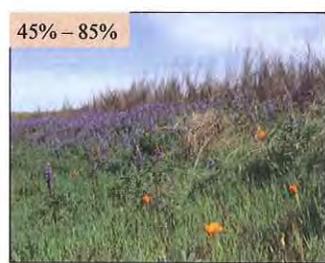
Farmscape Features Total 5  (2a + 2b) 

Section 3: Foraging Habitat

3a. Percentage of vegetative cover (non-crop area) that is forbs or flowering shrubs on farm.

The photos below illustrate some categories. See regional technical notes (listed on page 8) for lists of preferred pollinator plants and other information.

SELECT ONLY ONE	Score	Before	After	Treatment to increase score
> 85% cover	10	10		
45% – 85% cover	7			
30% – 45% cover	5			
20% – 30% cover	3			
< 20% cover	1			
<i>Subtotal (3a)</i>		10		



3b. Number of species of forbs and flowering shrubs on farm that bloom in spring and support bees. This includes some crops and cover crops (see appendix for examples).

SELECT ONLY ONE	Score	Before	After	Treatment to increase score
5+ species	10	3		<i>Plant native wildflowers and/or shrubs</i>
3 – 4 species	5			
1 – 2 species	3			
0 species	0			
<i>Subtotal (3b)</i>		3		

Section 3: Foraging Habitat (cont.)

3c. Number of species of forbs and flowering shrubs on farm that bloom in summer and support bees. This includes some crops and cover crops (see appendix for examples).

SELECT ONLY ONE	Score	Before	After	Treatment to increase score
5+ species	10	3		Plant native wildflowers and/or shrubs
3 - 4 species	5			
1 - 2 species	3			
0 species	0			
Subtotal (3c)		3		

3d. Number of species of forbs and flowering shrubs on farm that bloom in fall and support bees. This includes some crops and cover crops (see appendix for examples).

SELECT ONLY ONE	Score	Before	After	Treatment to increase score
5+ species	10	0		Plant native wildflowers and/or shrubs
3 - 4 species	5			
1 - 2 species	3			
0 species	0			
Subtotal (3d)		0		

Foraging Habitat Total 16 $(3a + 3b + 3c + 3d)$

Section 4: Native Bee Nesting Habitat

4a. Sites for ground-nesting bees.

Ground nests are often marked by a small mound of excavated soil, but may also be nothing more than a small hole in the ground. Nests may be dug in bare soil, areas of patchy vegetation, or hidden among plants, including at the base of crop plants such as squash. They are usually in marginal areas such as ditch banks or track sides, and frequently can be found close to buildings or other structures. (Photos below illustrate some nest sites.)

SCORE ALL OPTIONS THAT APPLY A = abundant, M = moderate, S = scarce	Score	Before	After	Treatment to increase score
Areas of well-drained bare ground, or with sparse vegetation	A = 5 M = 3 S = 1	1		
Areas with sandy to sandy loam soil	A = 5 M = 3 S = 1			
No-till cropping system: 1 point for every 10% of area untilled	0 - 10	10		
Areas with bare but compacted soil, or excavated soil (absent = 0, present = 3)	3	3		
Subtotal (4a)		14		



Section 4: Native Bee Nesting Habitat (cont.)

4b. Sites for wood- and cavity-nesting bees.

The great majority of wood- or cavity-nesting bees do not excavate their own nest; they occupy pre-existing tunnels or cavities in snags, the center of pithy-stemmed shrubs, and in brush piles. Bumble bees frequently nest in abandoned rodent burrows or under clump-forming bunch grasses. (Photos below illustrate some nest sites.)

SCORE ALL OPTIONS THAT APPLY A = abundant, M = moderate, S = scarce	Score	Before	After	Treatment to increase score
Dead wood, brush piles, or snags present	A = 5 M = 3 S = 1			
Pithy twigs (elderberry, cane fruit, sumac, etc.)	A = 5 M = 3 S = 1			Plant elderberry where possible
Areas of undisturbed native bunch grasses (clump-forming)	A = 5 M = 3 S = 1			
Subtotal (1b)		0		



Native Bee Nesting Habitat Total 14

(4a + 4b)

Section 5: Farm Practices

5a. Use of pesticides

	Score	Before	After	Treatment to increase score
No use of insecticides	40			
IPM program in place	10	10		
IPM program in place that specifically addresses pollinator protection	5			
No soil fumigation	5	5		
Insecticides sprayed at night	5			
Insecticides sprayed only outside of crop bloom period	5			
Buffer of at least 30' between any insecticide application and habitat areas	5			
Spray drift carefully controlled	5	5		
Annual calibration of spray equipment	5	5		
Subtotal (5a)		25		

5b. Land management techniques on the farm or in project area

	Score	Before	After	Treatment to increase score
Burning, mowing, or haying is done to < 1/3 of area each year.	10			
Grazing plan that encourages wildflower diversity/abundance	10			
No disturbance of field borders	5			Plant wildflowers (pollinator habitat)
Subtotal (5b)		0		

Farm Practices Total 0

(5a + 5b)

Habitat Assessment Reference Materials

Pacific Northwest

Plants for Pollinators in the Inland Northwest (Pullman PMC Technical Note)

http://www.xerces.org/wp-content/uploads/2011/02/nrcstechnote_plantsinlandnw1.pdf

California

Pollinator Biology and Habitat in California (NRCS Technical Note)

ftp://ftp-fc.sc.egov.usda.gov/CA/technical/technotes/TN_Biology_19_Pollinator_Biology_CA_5-09.pdf

Plants for Pollinators in Oregon (NRCS Technical Note)

http://plants.usda.gov/pollinators/Plants_for_Pollinators_in_Oregon_PM%2013.pdf

Southwest and South Central Regions

Pollinator Plants for Texas Conservation Practices (NRCS Technical Note)

<http://www.plant-materials.nrcs.usda.gov/pubs/txpmctn8222.pdf>

Mountain Region

Plants for Pollinators in the Intermountain West (Aberdeen PMC Technical Note)

http://www.xerces.org/wp-content/uploads/2011/02/nrcstechnote_plantsintermtnwest.pdf

Pollinator Biology and Habitat (Colorado NRCS Technical Note)

<http://efotg.nrcs.usda.gov/references/public/CO/pollinators.pdf>

Habitat Development for Pollinator Insects (Montana NRCS Technical Note)

http://plants.usda.gov/pollinators/Habitat_Development_for_Pollinator_Insects_MT-20.pdf

North Central States

Pollinators (South Dakota NRCS Fact Sheet)

http://plants.usda.gov/pollinators/Pollinators_South_Dakota_Fact_Sheet_SD-FS-55.pdf

Great Lakes States

Wisconsin Pollinator Biology and Habitat (NRCS Technical Note)

<ftp://ftp-fc.sc.egov.usda.gov/WI/technotes/biology-tn8.pdf>

Illinois Pollinator Biology and Habitat (NRCS Technical Note)

<http://efotg.nrcs.usda.gov/references/public/IL/BTechNote23.pdf>

Northeast Region

New England Pollinator Biology and Habitat (NRCS Technical Note)

ftp://ftp-fc.sc.egov.usda.gov/NH/WWW/Technical/New_England_NRCS_Pollinator_Tech_Note_FINAL.pdf

Mid Atlantic States

Delaware Native Plants for Native Bees (NRCS and Delaware Department of Agriculture Technical Bulletin)

<http://dda.delaware.gov/plantind/forms/publications/Delaware%20Native%20Plants%20for%20Native%20Bees.pdf>

Habitat Development for Pollinators in New Jersey (NRCS Technical Note)

http://plants.usda.gov/pollinators/Habitat_Development_for_Pollinators_NJ.pdf

Wildflower Meadows for Wildlife and Pollinators (Virginia NRCS Job Sheet)

http://plants.usda.gov/pollinators/Conservation_Cover_Wildflower_Meadow_for_Wildlife_and_Pollinators_327a.pdf

Southeast Region

Alabama Conservation Security Program: Wildlife Enhancement Activity, Pollinator Areas (NRCS Job Sheet)

http://plants.usda.gov/pollinators/CSP_Wildlife_Enhancement_Activity-Pollinator_Areas.pdf

Program and Practice Standard Guidance for Pollinator Conservation

Using Farm Bill Programs for Pollinator Conservation (NRCS Technical Note): Guidelines on how EQIP, CSP, and other programs can be used to restore or enhance habitat for pollinators.

<http://www.xerces.org/wp-content/uploads/2009/04/using-farmbill-programs-for-pollinator-conservation.pdf>

Farm Management Guidelines for Pollinator Conservation

Farming for Bees (Xerces Society Conservation Guidelines): A guide to adapting farm practices to conserve native crop pollinators and their habitat.

http://www.xerces.org/wp-content/uploads/2008/11/farming_for_bees_guidelines_xerces_society.pdf

Pesticide Considerations for Native Bees in Agroforestry (USDA National Agroforestry Center Technical Note): An article highlighting how to reduce bee poisoning from pesticides.

<http://www.xerces.org/wp-content/uploads/2008/10/agroforestrynotes35-pesticides.pdf>

How to Reduce Bee Poisoning from Pesticides (Oregon State University Extension Fact Sheet): A publication listing common agricultural pesticides and their known effects on multiple bee species.

<http://extension.oregonstate.edu/catalog/pdf/pnw/pnw591.pdf>

Supplementing Native Bee Nest Sites

Managing Alternative Pollinators: A Handbook for Beekeepers, Growers, and Conservationists (Sustainable Agriculture Research and Education Program Handbook): A full color guide to providing nests sites for bumblebees, mason bees, leafcutter bees, alkali bees, and other native species.

<http://www.sare.org/publications/pollinators/pollinators.pdf>

Tunnel Nest Construction and Management (Xerces Society Fact Sheet): Guidelines on the construction and maintenance of nests for tunnel nesting native bees.

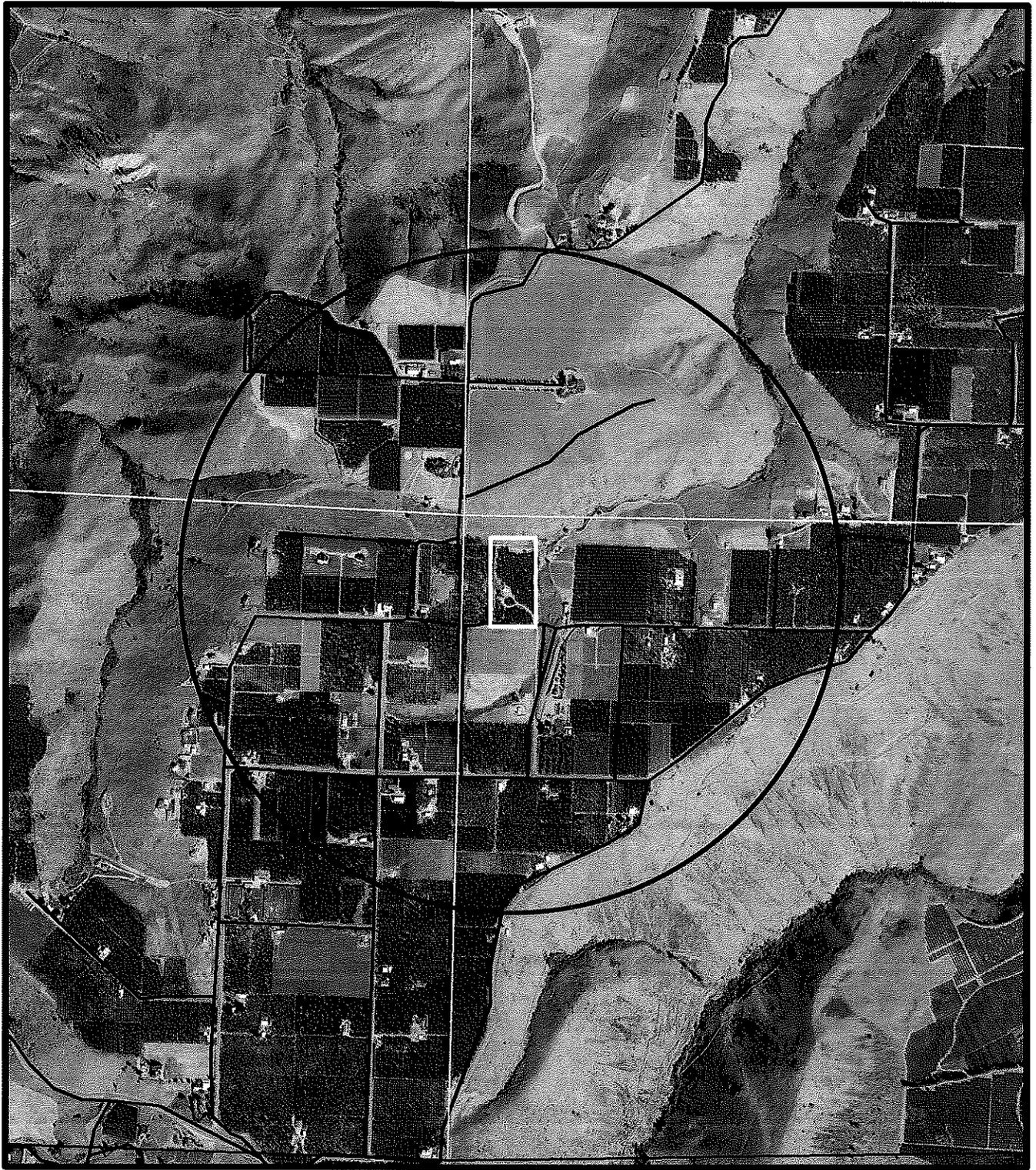
<http://www.xerces.org/wp-content/uploads/2009/11/tunnel-nest-management-xerces-society.pdf>

Crops and cover crops that provide pollen and/or nectar resources for bees (This list is not exhaustive):

Alfalfa, almonds, alyssum, apples, avocados, apricots, blueberries, buckwheat, canola, cherries, citrus, clover, corn, cotton, cranberries, cucumber, eggplant, fava beans, macadamia nuts, melons, mustard, peaches, pears, peas, peppers, phacelia, plums, pumpkins, raspberries, soybean, squash, strawberries, sunflower, tomatoes, vegetable seed, vetch, and watermelon.

Pollinator Habitat Enhancement CAP

Pat Producer 1/2 Mile Radius



May 2013

0 500 1,000 2,000 Feet



Checklist of Resource Concerns

CROPLAND

CLIENT		LOCATION	
PLANNER		DATE	
LAND UNITS		TOOLS	

This check sheet is designed to assist planners and clients in identifying resource concerns during the planning process. The planning criteria outlined in Section III of the FOTG sets the minimum level of treatment. If a screening question is NO, this indicates no resource concern exists and no assessment is required. If a screening question is YES, the assessment must be completed to evaluate if there is a resource concern. If the Assessment is YES, Planning Criteria is met. If the Assessment is NO, the Planning Criteria is not met and a Resource Concern exists.

Resource Concern * required response	Screening Questions		Assessment Tools	Assessment Level Required to Meet Planning Criteria YES = Meets Planning Criteria NO = Resource Concern	Y E S / N O	
	NO = Met Screening (Not a RC) YES = Go to Assessment	Y E S / N O			Y E S / N O	Y E S / N O
SOILS RESOURCES						
1.SOIL EROSION: Sheet, rill and wind erosion*	Are perennial ground cover < 90% and slope > 10%.		<ul style="list-style-type: none"> ➤ RUSLE2 ➤ WEPS 	Water erosion rate <=T AND Wind erosion rate <=T		
2.SOIL EROSION: Concentrated flow erosion *	Do Ephemeral gullies occur? AND Are classic gullies present?		<ul style="list-style-type: none"> ➤ Field measurements ➤ Observations 	Are conservation practices and managements in place to prevent or control ephemeral gullies? AND Is classic gully management adequate to stop the progression of head cutting and widening and are offsite impacts are minimized by vegetation and/or structures?		
3.SOIL EROSION: Excessive bank erosion from streams, shorelines or water conveyance channels*	Are streams or shoreline on or adjacent to site?		<ul style="list-style-type: none"> ➤ SVAP2 	For shorelines and water conveyance channels; are banks stable or commensurate with normal geomorphological processes? AND For stream banks:- SVAP2 bank condition >=5		
	OR Is bank erosion from streams, shorelines or conveyance channels present?			OR Bank erosion caused solely by upstream/upland landuse and management decisions that are beyond the client's control		
4. SOIL QUALITY DEGRADATION: Subsidence	Are Histisol soils present?		<ul style="list-style-type: none"> ➤ Client input ➤ Planner observations 	Is subsidence adequately managed to meet client's objectives?		
	OR Are there Histisols present exhibiting subsidence?					
5. SOIL QUALITY DEGRADATION: Compaction	Is soil compaction a problem? AND Do activities cause soil compaction problems?		<ul style="list-style-type: none"> ➤ Soil Quality Test Kit ➤ Observation of soil and plant condition ➤ Client input/planner observation 	Is compaction managed to meet Client's production and management objectives?		
6. SOIL QUALITY DEGRADATION: Organic matter depletion*	Is permanent ground cover < 80%?		<ul style="list-style-type: none"> ➤ RUSLE2 ➤ WEPS 	SCI>0		
7. SOIL QUALITY DEGRADATION: Concentration of Salts or other chemicals	Do activities cause salinity/sodicity problems?		<ul style="list-style-type: none"> ➤ Soil diagnostic evaluations 	Are conservation practices and managements in place to mitigate on-site effects?		

Checklist of Resource Concerns

CROPLAND

Resource Concern * required response	Screening Questions	Y E S	N O	Assessment Tools	Assessment Level Required to Meet Planning Criteria	Y E S	N O
	NO = Met Screening (Not a RC) YES = Go to Assessment				YES = Meets Planning Criteria NO = Resource Concern		
WATER RESOURCES							
8. EXCESS WATER: Ponding, flooding, seasonal high water table, seeps and drifted snow	Is excess water a problem? AND Do activities cause ponding/flooding problems			<ul style="list-style-type: none"> ➤ Client Input ➤ Planner observation 	Is excess water managed to meet Client's objectives?		
9. INSUFFICIENT WATER: Inefficient moisture management	Is Moisture Management a problem? AND Do activities cause inefficient moisture management?			<ul style="list-style-type: none"> ➤ Client Input ➤ Planner observation 	Are runoff and evapotranspiration levels minimized to meet Client's management objectives?		
10. INSUFFICIENT WATER: Inefficient use of irrigation water *	Is the PLU irrigated?			<ul style="list-style-type: none"> ➤ IWI-Irrigated Water Index 	IWI >=85% OR State established criteria		
11. WATER QUALITY: Excess nutrients in surface and groundwater *	Are organic or inorganic nutrients applied? AND Is the PLU grazed?			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation ➤ Nutrient budget 	Are nutrient and amendment applications based on soil or tissue tests and nutrient budgets for realistic yields? AND Are conservation practices and managements in place to minimize offsite impacts?		
12. WATER QUALITY DEGRADATION: Pesticides transported to surface and ground waters	Are pest control chemicals applied?			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation ➤ WinPST 	Are pesticides stored, handled, disposed and managed to prevent runoff, spills, leaks and leaching? AND Are conservation practices and managements in place to minimize offsite impacts?		
13. WATER QUALITY DEGRADATION: Excess pathogens and chemicals from manure, biosolids or compost applications*	Are potential sources of pathogens or pharmaceuticals applied on the land?			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation 	Are organic materials applied, stored, and/or handled to mitigate negative impacts to water sources?		
14. WATER QUALITY DEGRADATION: Excessive salts in surface and ground waters	Is salt concentration a limiting factor?			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation 	Are salt concentrations managed to mitigate off-site transport to surface or ground waters?		

Checklist of Resource Concerns

CROPLAND

Resource Concern * required response	Screening Questions NO = Met Screening (Not a RC) YES = Go to Assessment	Y E S	N O	Assessment Tools	Assessment Level Required to Meet Planning Criteria YES = Meets Planning Criteria NO = Resource Concern	Y E S	N O
15. WATER QUALITY DEGRADATION: Petroleum and heavy metals and other pollutants transported to receiving waters	Do activities present the potential for contamination?			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation 	Are petroleum, heavy metals or other potential pollutants stored and handled to avoid runoff or leaching?		
16. WATER QUALITY DEGRADATION: Excessive sediment in surface waters*	Are permanent ground cover < 90% and slope > 10%? AND Are classic gullies present? AND Are streams or shoreline on or adjacent to site?			<ul style="list-style-type: none"> ➤ RUSLE2 ➤ Client input ➤ Planner observation ➤ SVAP2 ➤ WEPS 	Do upslope treatment and buffer practices address concentrated flows to water bodies? AND SVAP2 - bank condition ≥ 5. AND Are livestock and vehicle water crossings stable? AND Is water erosion rate ≤ T? AND Is wind erosion rate ≤ T?		
17. WATER QUALITY DEGRADATION: Elevated water temperature	Is there a water course on or adjacent to the site with State Agency identified temperature impairment?			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation ➤ SVAP2 	Is SVAP2 - riparian area quality element score ≥ 5? AND Is SVAP2 - riparian area quantity quality element score ≥ 5? AND Is SVAP2 - canopy cover element score ≥ 6?		
	OR Is water course temperature a client concern				OR Are existing practices in place to address water temperature?		
PLANT RESOURCES							
18. DEGRADED PLANT CONDITION: Undesirable plant productivity and health	Are plant production and health a client concern?			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation ➤ Crop Tolerance Table 	Are plants adapted to the site, meet production goals and do not negatively impact other resources? AND Is plant damage from wind erosion below Crop Damage Tolerance levels?		
20. DEGRADED PLANT CONDITION: Excessive plant pest pressure	Is plant productivity limited from pest pressure?			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation 	Is pest damage to plants below economic or environmental thresholds or client-identified criteria? AND Are plant pests, including noxious and invasive species managed to meet client objectives?		

Checklist of Resource Concerns

CROPLAND

Resource Concern * required response	Screening Questions	Y E S	N O	Assessment Tools	Assessment Level Required to Meet Planning Criteria	Y E S	N O
	NO = Met Screening (Not a RC) YES = Go to Assessment				YES = Meets Planning Criteria NO = Resource Concern		
21. DEGRADED PLANT CONDITION: Wildfire hazard, excessive biomass accumulation	Is wildfire hazard a concern?			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation 	Are fuel loads and fuel ladders managed to provide defensible space and meet client objectives?		
ANIMAL RESOURCES							
23. LIVESTOCK PRODUCTION LIMITATION: Inadequate feed and forage	Client is actively grazing animals. (Grazing Modifier)			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation 	Are livestock forage, roughage and supplemental nutritional requirements addressed?		
24. LIVESTOCK PRODUCTION LIMITATION: Inadequate livestock shelter	Client is actively grazing animals. (Grazing Modifier)			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation 	Do artificial or natural shelters meet animal health needs and client objectives?		
25. LIVESTOCK PRODUCTION LIMITATION: Inadequate livestock water	Client is actively grazing animals. (Grazing Modifier)			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation 	Is water of acceptable quality and quantity adequately distributed to meet animal needs?		
NOTES:							

Checklist of Resource Concerns

LANDSCAPE

CLIENT	LOCATION
PLANNER	DATE
LAND UNITS	TOOLS

This check sheet is designed to assist planners and clients in identifying resource concerns during the planning process. The planning criteria outlined in Section III of the FOTG sets the minimum level of treatment. If a screening question is NO, this indicates no resource concern exists and no assessment is required. If a screening question is YES, the assessment must be completed to evaluate if there is a resource concern. If the Assessment is YES, Planning Criteria is met. If the Assessment is NO, the Planning Criteria is not met and a Resource Concern exists.

Resource Concern * required response	Screening Questions NO = Met Screening (Not a RC) YES = Go to Assessment	Y E S	N O	Assessment Tools	Assessment Level Required to Meet Planning Criteria Yes = Meets Planning Criteria No = Resource Concern	Y E S	N O
WILDLIFE RESOURCES							
22. INADEQUATE HABITAT FOR FISH AND WILDLIFE- Habitat degradation	Does client want to actively manage for wildlife?			<ul style="list-style-type: none"> ➤ Species-specific wildlife habitat assessment tools. ➤ SVAP2 ➤ Generalized WHSI finalized by states and detailed models by selected species and habitat type. 	Is WHSI rating ≥ 0.5 ? AND when surface stream present 65 - Is SVAP2 – barriers to movement element score > 7? AND 67 - Is SVAP2 – fish habitat complexity element score > 7? AND 63 - Is SVAP2 – aquatic invertebrate habitat element score > 7?		
					OR Are conservation practices and management in place that meet or exceed species or guild-specific habitat model thresholds?		
					OR Does available quality and extent of food, water, space and cover support habitat requirements for the species of interest? AND Is connectivity of habitat components adequate to support stable populations of targeted species		
ENERGY RESOURCES							
26. INEFFICIENT ENERGY USE- Equipment and facilities	Is the Client interested in improving equipment and facilities energy efficiency?			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation ➤ USDA approved energy audit ➤ NRCS energy estimator 	Has a USDA approved energy audit been implemented that address equipment and facilities to meet client objectives? OR Are on- farm renewable energy and/or energy conserving practices been implemented to meet client objectives?		
27. INEFFICIENT ENERGY USE- Farming/ranching practices and field operations.	Is Client interested in improving energy use in farm and ranch field operations?			<ul style="list-style-type: none"> ➤ Client input ➤ Planner observation ➤ USDA approved energy audit ➤ NRCS energy estimator ➤ Conservation on the Farm Checklist 	Has a USDA approved energy audit been implemented that address field operations to meet client objectives? OR Are on- farm renewable energy and/or energy conserving practices been implemented to meet client objectives?		

Checklist of Resource Concerns

LANDSCAPE

Resource Concern * required response	Screening Questions NO = Met Screening (Not a RC) YES = Go to Assessment	Y E S	N O	Assessment Tools	Assessment Level Required to Meet Planning Criteria Yes = Meets Planning Criteria No = Resource Concern	Y E S	N O
AIR RESOURCES							
<p>28. AIR QUALITY IMPACTS: Emissions of Particulate Matter PM and PM precursors</p>	<p>Do activities contribute to agricultural source PM or PM precursor emissions? Examples:</p> <ul style="list-style-type: none"> • Prescribed Burn is conducted • Travel ways are unpaved or untreated with binding agents • Engines (combustion source) • Tillage • Pesticides are applied • Fertilization (manure/commercial) • CAFO/manure management) <p>AND</p> <p>Have episodes or complaints of emissions of PM (dust, smoke, exhaust, etc.), or chemical drift occurred?</p>			<ul style="list-style-type: none"> ➤ Client Input ➤ Planner observation 	<p>Are PM and PM Precursor emissions managed to meet client objectives?</p>		
<p>29. AIR QUALITY IMPACTS: Emissions of Greenhouse Gases (GHGs)</p>	<p>Do activities produce GHGs emissions? Examples:</p> <ul style="list-style-type: none"> • Fertilization (manure/commercial) • CAFO/manure management • Engines (combustion source) • Tillage <p>AND</p> <p>Are GHGs regulated in this planning area?</p>			<ul style="list-style-type: none"> ➤ Client Input ➤ Planner observation 	<p>1. Emissions of greenhouse gases meet client objectives.</p>		

Checklist of Resource Concerns

LANDSCAPE

Resource Concern * required response	Screening Questions NO = Met Screening (Not a RC) YES = Go to Assessment	Y E S	N O	Assessment Tools	Assessment Level Required to Meet Planning Criteria Yes = Meets Planning Criteria No = Resource Concern	Y E S	N O
30. AIR QUALITY IMPACTS: Emissions of Ozone Precursors	Do operations produce ozone or precursor emissions? Examples: <ul style="list-style-type: none"> Engines (combustion source) Pesticide application Burning CAFO/manure management Fertilization (manure/commercial) 			<ul style="list-style-type: none"> Client Input Planner observation 	Are ozone precursor emissions managed to meet client objectives?		
31. AIR QUALITY IMPACTS: Objectionable odors	Do activities contribute to nuisance air quality conditions? Examples: <ul style="list-style-type: none"> Pesticide application CAFO / manure management Composting is conducted <p>AND</p> <p>Are odor sources regulated in this planning area?</p>			<ul style="list-style-type: none"> Client Input Planner observation 	Are odors managed to meet client objectives?		

NOTES

Hedgerow Planting

Washington Conservation Practice Job Sheet 422

Definition

Establishment of dense vegetation in a linear design to achieve a natural resource conservation purpose.

Purpose

Providing at least one of the following conservation functions:

- Food, cover and corridors for terrestrial wildlife.
- Food and cover for aquatic organisms that live in streams with bankfull width less than 5 feet.
- Improvement of water quality and aquatic habitat in ditches and channels modified for agricultural uses with bankfull widths less than 15
- Living fences
- Boundary delineation
- Contour guidelines
- Screens and barriers to noise and dust
- Improvement of landscape appearance
- To prevent chemical drift



Where used

This practice applies in, across, or around fields of cropland, hayland, pastureland, or other land except forest.

Resource management system

Hedgerow plantings are normally established concurrently with other practices as part of a resource management system for a conservation management unit. For example, irrigation systems, to establish the hedgerow planting, bank protection if planted along a stream, or upland wildlife habitat management if wildlife is the primary resource concern. To maintain proper functioning of a planting, excessive water flows and erosion must be controlled upslope of the hedgerow planting (filter strip, diversion, critical area planting, residue management). New plantings must be protected from grazing during establishment (prescribed grazing, access control).

Wildlife

Connecting a hedgerow with existing perennial vegetation, such as woodlots and woody draws (tree/shrub establishment) or other woody habitat such as a, windbreak/shelterbelt establishment, or riparian forest buffer, benefits wildlife, including fish and other aquatic organisms. Select tree and shrub species and a planting pattern that benefit the wildlife species of interest and enhance local landscape aesthetics.



Operation and maintenance

- Replace all dead seedlings (annually) for at least three years after the planting is made.
- Replant with the same species or one that is suitable to the soils and is compatible with the original planting.
- Plant competition can be removed by hand, mechanical, or chemical means. Do not disturb or otherwise damage seedlings by the improper use of chemicals, tools or machinery. When mechanical cultivation is used do not cultivate deeper than 3 inches, as the plant roots can be damaged.
- Use mechanical means, mulches and/or herbicides to control weeds, grasses or other competitive vegetation. Control competitive vegetation until the surrounding ground surface is completely or nearly completely shaded by the trees and shrubs during the growing season.
- If at all possible, maintain an isolation strip of at least 8 feet for the entire life of the planting.
- Chemicals must be applied on no less than a 24-inch band to each side of the row.
- Plantings will be protected from rodents, rabbits, hares, and deer. Means of animal control may include either chemical repellents or mechanical devices such
- Where net wire fencing is used to control rabbits and hares, it will extend at least 4 inches below ground surface. When individual trees are wrapped with burlap
- Prune and shape damaged trees.
- Drip irrigation systems must be maintained weekly during irrigation season to make sure emitters are not plugged and restricting water flow.



Specifications

Site-specific requirements are listed on the specifications sheet. Specifications are prepared in accordance with the NRCS Field Office Technical Guide. See practice standard Hedgerow Planting, code 422.

Online Technical References for Selecting Plant Materials in Washington *

http://efotg.nrcs.usda.gov/references/public/WA/Tech_Note_Bio24.doc

http://efotg.nrcs.usda.gov/references/public/WA/MasterSpecies_1005.xls

http://efotg.nrcs.usda.gov/references/public/WA/TN2_species_descriptions.pdf

http://efotg.nrcs.usda.gov/references/public/WA/TN4_pm_releases.pdf

http://efotg.nrcs.usda.gov/references/public/WA/TN10_riparian reveg_plants.pdf

http://efotg.nrcs.usda.gov/references/public/WA/TN11_riparian reveg_tech.pdf

http://efotg.nrcs.usda.gov/references/public/WA/TN13_windbreak_shelterbelt_landscaping.pdf

*** Some online documents may take several minutes to download.**

**Washington
Hedgerow Planting (422)
Plan/Specification Sheet**

Landowner: <i>Pat Producer</i>	Farm #: <i>100</i>	Total Acres: <i>7.25</i>		
	Tract #: <i>100</i>	S.	T.	R.
Written By: <i>Kim Planner</i>	NRCS Job Approval Authority Approval By:			
	Signature:			
Date: <i>May 20 2013</i>	Date:			
Field: <i>North & South</i>	Acres: <i>0.25 to 0.50</i>			

Field Description:

Fields are: - Assoc. Ag. Land North & Assoc. Ag. Land South (see map).

- Dry, non-irrigated areas of mostly non-native weedy grasses.*
- To steep to farmland.*
- One eight to one quarter acre in size.*

Hedgerow Planting Purpose/Objectives: (Check all that apply)

- | | |
|--|---|
| <input checked="" type="checkbox"/> Wildlife habitat/cover | <input type="checkbox"/> Boundary Delineation |
| <input checked="" type="checkbox"/> Wildlife habitat/food | <input type="checkbox"/> Contour Marker |
| <input type="checkbox"/> Living Fence | <input type="checkbox"/> Snow Trap |
| <input type="checkbox"/> Noise, Dust and View Screen | <input type="checkbox"/> Sand Trap |
| <input type="checkbox"/> Landscape Appearance | <input type="checkbox"/> Water Quality |
| <input type="checkbox"/> Prevent Chemical Drift | <input type="checkbox"/> Water Quantity |
| <input type="checkbox"/> Other | <input type="checkbox"/> Other |

Enhance habitat for specific populations: (check target groups):

<input type="checkbox"/> Waterfowl	Landowner species goals/objectives: <i>I improve pollination service provided by managed and wild bees by increasing floral diversity and ensuring continuous bloom.</i>
<input type="checkbox"/> Shorebirds	
<input type="checkbox"/> Songbirds	
<input type="checkbox"/> Small Mammals	
<input type="checkbox"/> Hoofed Mammals	
<input type="checkbox"/> Other Mammals	
<input type="checkbox"/> Amphibians	
<input type="checkbox"/> Reptiles	
<input type="checkbox"/> Fish	
<input checked="" type="checkbox"/> Pollinators	
<input type="checkbox"/> Other	

Inventory of Existing Habitat (for objectives and animal groups identified above)

Biology Technical Note #14 Score: _____ Benchmark: _____ After treatment: _____
 Note: Minimum Quality Criteria score is overall 0.5

Habitat Limiting Factors Summary: (Check all that apply)

Landuse	Food Type	Food Amount	Food Availability	Cover Type	Cover Amount	Interspersion & Distance	Water Quan & Qual
Pasture	<input type="checkbox"/>						
Cropland	<input type="checkbox"/>						
Rangeland	<input type="checkbox"/>						
Woodland	<input type="checkbox"/>						
Riparian	<input type="checkbox"/>						

Soil Type (enter the soil type or types found within the management area)

Coloockum silt loam 15 to 25% slopes
 Coloockum silt loam 25 to 45% slopes

Planned Plantings - see attached plot layout

Trees		Shrubs		Bunch Grasses	
Species	Distance between Plants	Species	Distance between Plants	Species	Distance between Plants
Caragana arborescens			10		
Eriogonum heracleoides			4		
Ericameria nauseosa			4		
Balsamorhiza sagittata			3		
Gaillardia aristata			2		

Linear Feet Planted ^{Hedgerow} Row Width Feet (Must be 15 feet or more) - Entire Hedgerow
 Number of Vegetative Rows Distance between Rows
 Is fence necessary to exclude cattle? Yes If you need fence, what Feet
 No length is needed?

Vegetation Management **Support Practices** (Specifications that will be used to implement these activities are provided under the appropriate NRCS conservation practice standards indicated below and provided separately)

Establishment/Enhancement-Woody	<input type="checkbox"/> 382	<input checked="" type="checkbox"/> 484	<input type="checkbox"/> 472	<input checked="" type="checkbox"/> 490	<input type="checkbox"/> 595
	<input checked="" type="checkbox"/> 612	<input type="checkbox"/> 643	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>			

Operation and Maintenance: Refer to individual O&M requirements listed in individual Support Practices

Cooperator Agreement:

I have reviewed this plan and agree to install as designed.

Pat Producer

Cooperator Signature

Pat Producer

Cooperator Name

March 1, 2013

Date

Practice Completion:

I have made an on site inspection of the site (or I am accepting owner/contractor documentation), and have determined that the job as installed does conform to the drawings and practice specifications.

Planner Signature

Planner Name

Date

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication program information (Braille, large print, audiotape, etc.) should contact the USDA Office of Communications (202) 720-2791.

To file a complaint of discrimination write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington DC 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

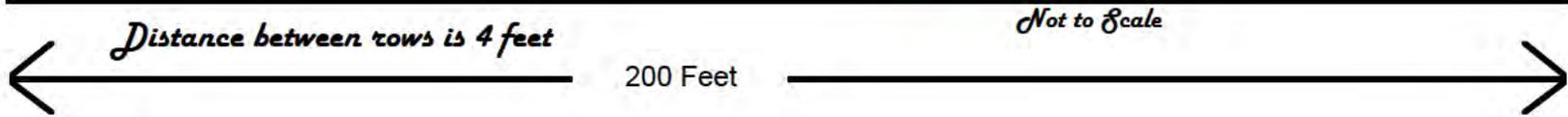
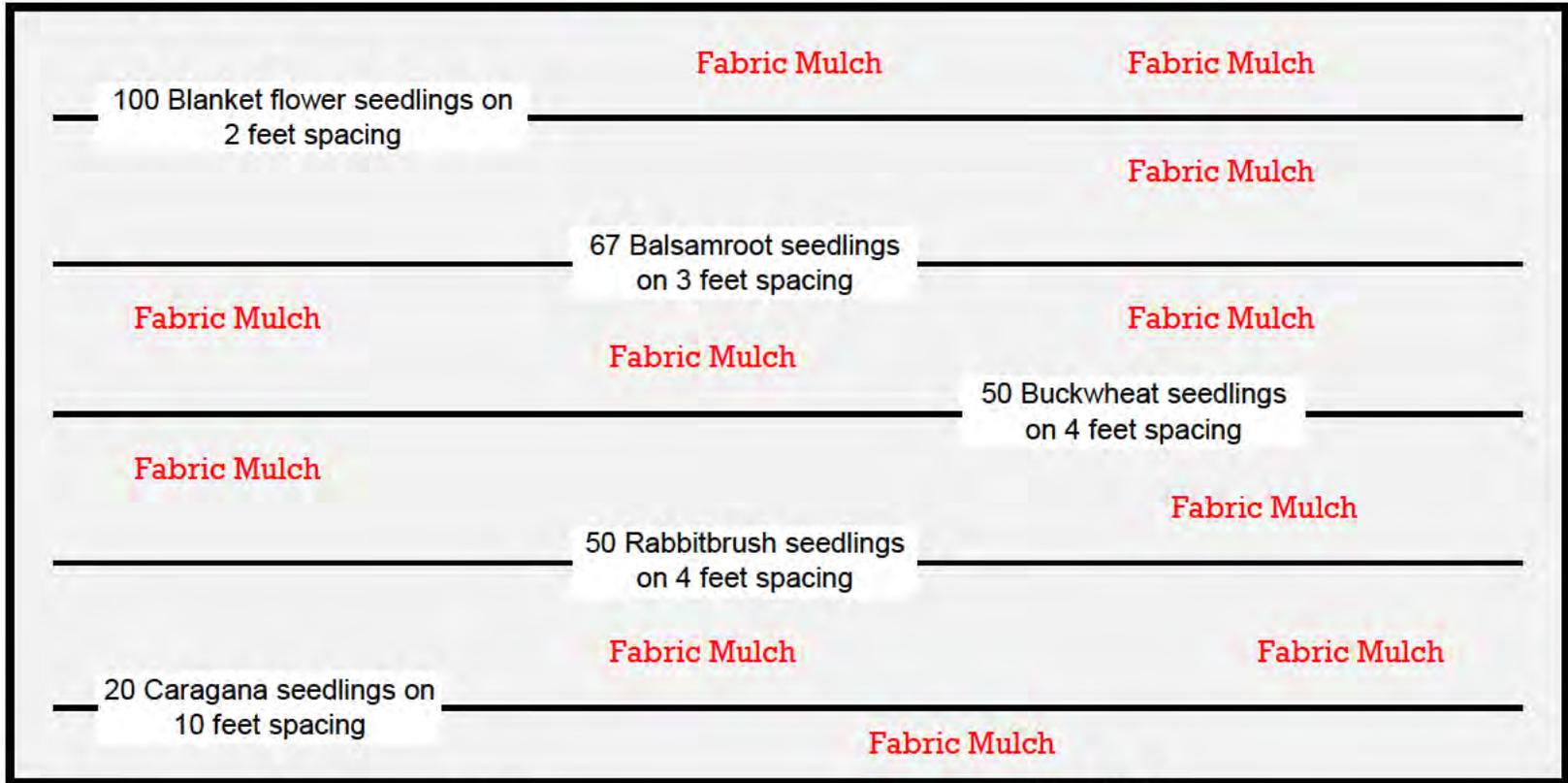
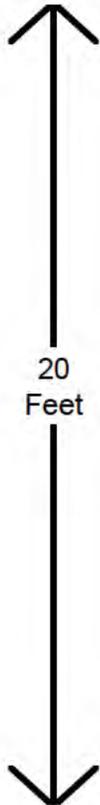
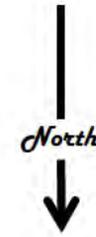
Hedgerow Planting

Fields:

Client: Pat Producer

Associated Agland North
&
Associated Agland South

PLOT LAYOUT





Tree/Shrub Site Preparation

Conservation Practice Job Sheet

490-WA-JS

Natural Resources Conservation Service, Washington

January 2007

Client:



Definition

Treatment of areas to improve site conditions for establishing trees and/or shrubs.

Purposes

- Encourage natural regeneration of desirable woody plants
- Permit artificial establishment of woody plants

Where used

On all lands where establishment of woody plants (trees, shrubs, vines, etc.) is desired

Conservation Management Systems

Tree/Shrub Site Preparation is a practice that is part of a conservation management system for any lands desiring to establish woody plants. The practice is used to make ready an area for the establishment and growth of woody plants for future harvest, improved ecological conditions, watershed enhancement, aesthetics, etc. A thorough investigation and understanding of competing vegetation and soils is the key to the successful

establishment of woody plants. Controlling the re-growth of competing vegetation is also part of the conservation management system. A post treatment controlling competing vegetation that is inhibiting tree/shrub growth is usually needed to allow seedlings to develop a robust root system and to grow at an un-impeded growth rate. Use Exclusion (472) may be needed to protect trees or shrubs from domestic livestock, people or vehicles.

Plans and Specifications

Plans and specifications shall include the required vegetation control and acceptable site preparation methods; timing of application; deep ripping or disking; and any erosion control measures needed. Instructions will be prepared for each site and purpose and recorded using approved specification sheets.

Operation and Maintenance

Repair erosion control measures as necessary to ensure proper function. Access by vehicles during site preparation or after should be controlled to minimize erosion problems, compaction and other impacts to the site.

Monitor and control undesirable vegetation in treated areas. On forestland use Forest Stand Improvement (666), on other lands use Brush Management (314) to plan any follow-up treatment of any undesirable vegetation.

All chemicals will be applied in accordance with label guidelines; Oregon's Forest Practices Act; and will comply with federal, state, and local laws and regulations during the installation, operation and maintenance.

TREE/SHRUB SITE PREPARATION SPECIFICATION SHEET **Site Preparation on Pasture or Crop Land**

Site preparation on pasture or cropland may include: 1) deep ripping to break up any compacted layer(s), and/or 2) disking or spraying chemicals (see below) to kill any growing vegetation. Deep ripping, if needed, shall be completed, at a minimum, in the late summer of the year PRIOR to seedling establishment. Disc to smooth, as soon as possible. Vegetation re-growth will be treated at the time most beneficial to killing unwanted vegetation. Perform final disking to smooth planting site and/or kill competing vegetation, PRIOR to seedling establishment. When soil erosion is a concern, establish a temporary cover in the area of concern using Critical Area Planting specification # 342.

Additional Information:

 Site Preparation on Forest/Grazed Forest Land

Site preparation can be accomplished by hand, heavy equipment, or chemicals (see below). Hand site preparation can be accomplished with a chainsaw, brush cutter, or machete to cut down brush or small trees. A hoe, shovel, pulaski, etc., can be used when removing brush, grasses or forbs. The spot to be planted will have an area no smaller than 4 feet in diameter cleared. All competing plants will be severed from their roots. Re-growth of competing vegetation, after seedling establishment, will be controlled, for a minimum of 2 years after seedling establishment.

Limit the use of heavy equipment to slopes less than 30 percent. To minimize soil compaction limit equipment use to when soil moisture is low (mid-summer to early fall). A brush rake shall be used when piling or windrowing trees/brush. Attach brush rake to, or in place of regular blade. Slash material can be chopped or crushed in place. After treatment, slash material shall be no larger than 6 inches in diameter and no longer than 4 feet.

Hand piled slash will not exceed 6' x 6' x 6', when leave trees are present. Mechanically piled windrows will be no more and 10 feet high, 20 feet wide, at the base, and placed on the contour. When soil erosion is a concern, establish a temporary cover in the area of concern using Critical Area Planting specification # 342.

Additional Information:

 Site Preparation on Grazed Range Land

Site preparation can be accomplished by hand, heavy equipment, or chemicals (see below). Hand site preparation can be accomplished with a chainsaw, brush cutter, or machete to cut down brush or small trees. A hoe, shovel, or pulaski, etc., can be used when removing brush, grasses or forbs. The spot to be planted will have an area at least 4 feet in diameter cleared. All competing vegetation in the plating area will severed from their roots. Re-growth of competing vegetation, after seedling establishment, will be controlled, for a minimum of 2 years after seedling establishment.

Limit the use of heavy equipment to slopes less than 30 percent. To minimize soil compaction limit equipment use to when soil moisture is low(mid-summer to early fall).

Slash material can be chopped or crushed in place. After treatment, slash material shall be no larger than 6 inches in diameter and no longer than 4 feet.

When soil erosion is a concern, establish a temporary cover in the area of concern using Critical Area Planting specification # 342.

Additional Information:

TREE/SHRUB SITE PREPARATION SPECIFICATION SHEET **Chemical Site Preparation for All Landuses**

Herbicides shall be applied according to federal, state, local regulations and label directions. Herbicides shall be registered for the current landuse. All herbicides shall be evaluated by running WIN-PST. WIN-PST will be used to evaluate potential human and water resource concerns. A WIN-PST hazard rating of Intermediate or higher requires mitigation. Required mitigation shall consist of:

- **Aerial/Ground**

Buffer strips shall be establish around streams, riparian zones, wetlands, residential areas, orchards and crop fields. Buffer strips shall comply with State or local regulations.

- **Backpack sprayer**

For small or irregularly shaped areas a backpack sprayer may be used. Do not use a backpack sprayer on vegetation over 5 feet tall. Use backpack sprayers for basal treatment application. Buffer strips shall be established and comply with State or local regulations.

- **Injection**

Hard to kill species can be controlled by herbicide injection. Herbicides can be injected by a "hypo-hatchet", or applied with the "hack and squirt" method. A hypo-hatchet injects a metered amount, depending upon the herbicide and tree specie being controlled. Hack and squirt requires one to spray herbicide from a squirt bottle into the opened wound create by a hatchet. Label directions will be followed.

- **Timing**

Timing of application is critical, and will depend upon the vegetation being treated. Consult with a licensed applicator, ODF forester, or extension agent for recommended dates. Follow all label directions. Re-apply as necessary.

SAFETY -- When applying herbicides, do the following: 1) Wear protective clothing and safety devices (safety glasses, air filtering mask, etc.) as recommended on the label. Bathe after each use; 2) Read and follow all label directions closely, even if you have read them before; 3) Be cautious when applying herbicides. Know your legal responsibility as a pesticide applicator. You may be liable for any and all injury or damage resulting from pesticide application.

Additional Information:

Site Preparation on Wildlife Land – See Pasture/Crop, Forest/Grazed Forest, or Grazed Range depending upon types of vegetation present.

 Information on Burning Piles

Slash and brush piles can be burned. To burn slash, allow to dry over a summer. Cover a portion of slash with plastic, waterproof paper, etc. to allow for ignition in the winter. Clear a 1-2 foot area, around slash pile, of materials that will allow fire to escape when burned. ALL BURNING MUST MEET ALL LOCAL AND STATE BURNING REGULATIONS. CONTACT THE DEPARTMENT OF NATURAL RESOURCES (DNR) PRIOR TO ANY BURNING. NRCS NOT RESPONSIBLE FOR THE PLANNING, DESIGN, AND APPLICATION FOR ANY BURNING.

Additional Requirements:

Operation and Maintenance Information:

Practice Specifications Approval and Completion Certification
--

DESIGN AND INSTALLATION/LAYOUT APPROVAL:

I have job approval authority and certify this practice has been designed with specifications to meet the conservation practice standard and that the client has been advised of installation and layout elements:

NRCS Representative name and title (type or print):			
NRCS Representative Signature:		Date:	

LANDOWNER/OPERATOR ACKNOWLEDGES:

- a. They have received a copy of the specifications and understand the contents including the scope and location of the practice.
- b. They have obtained all necessary permits and/or rights in advance of practice application, and will comply with all ordinances and laws pertaining to the application of this practice.
- c. No changes will be made in the installation of the job without prior concurrence of the NRCS.
- d. Maintenance of the installed work is necessary for proper performance during the life of the practice. The practice life is _____.

I have reviewed all specifications and agree to install as specified:

Landowner/operator name and title (type or print):			
Landowner/operator Signature:		Date:	

RECORD OF COMPLETION AND CHECK OUT CERTIFICATION:

Units (_____)	Date Completed by Client:	Date Certified:	Approver's Initials:

I have job approval authority and certify this practice has been applied and meets design specifications:

NRCS Representative name and title (type or print):			
NRCS Representative Signature:		Date:	



TREE/SHRUB ESTABLISHMENT

Conservation Practice Specification 612

APRIL 2003

Client/Operating Unit: Pat Producer	Tract: 100	Farm No.: 100	Field No.: see map
Farm/Ranch Location: Wenatchee	County: Chelan	SWCD/HU Code:	Date: Mar. 2013
Program:	Contract Item #:	Planned Installation Date: Mar 2014	

IT SHALL BE THE RESPONSIBILITY OF THE OWNER TO OBTAIN ALL NECESSARY PERMITS AND/OR RIGHTS, AND TO COMPLY WITH ALL ORDINANCES AND LAWS PERTAINING TO THIS INSTALLATION.

INSTALLATION SHALL BE IN ACCORDANCE WITH THE FOLLOWING DRAWINGS, SPECIFICATIONS AND SPECIAL REQUIREMENTS. NO CHANGES ARE TO BE MADE IN THE DRAWINGS OR SPECIFICATIONS WITHOUT PRIOR APPROVAL OF THE NRCS TECHNICIAN.

Drawings, No.: , ,

Associated Practice Specifications: 422, 484, 490,

Soil or suitability group: Colockum silt loam

Acres to be planted: 4000 sq. ft.

Spacing: varies, see attached diagram

Species: Caragana arborescens **Amount/ac** 40 (N. & S. hedgerow total)

Species: Eriogonum heracleoides **Amount/ac** 100 (N. & S. hedgerow total)

Species: Ericameria nauseosa **Amount/ac** 100 (N. & S. hedgerow total)

Species: Balsamorhiza sagittata **Amount/ac** 133 (N. & S. hedgerow total)

Species: Gaillardia aristata **Amount/ac** 200 (N. & S. hedgerow total)

Total number of Trees per acre:

Planting Stock Requirements:

Planting stock should not come from sources greater than **250 miles** away in latitude, **500 miles** in longitude, or more **2,000 feet elevation**. Bare root seedlings shall be at least **3/8 inch thick** at 1 inch above the root collar, have a shoot **at least 12 inches** tall, and have a **root-to-shoot ratio of 2:1**. Container-grown stock shall have a root mass of at least **7 cubic inches** and seedling height should be at least **6 inches**.

Planting shall be performed within the period: March 1 to April 15

Handling and Maintenance Requirements:

- Roots of bare root stock shall be **kept moist at all times** during planting operations by placing in a water-soil (mud) slurry, super-absorbent (e.g. polyacrylamide) slurry, or covering with wet peat moss, wet cloth, wet gunny sack or equivalent. Container or potted stock shall be kept moist at all times by periodic watering.
- Rooted planting stock will be **stored in a cool, moist environment** (34-38⁰F) or heeled into the soil. During all stages of handling and storage, keep roots moist and cool and free of mold. Keep roots covered at all times. Landowner may keep stock for up to one week before planting by storing in a shaded, cool, moist location. **Do not store bare root planting stock in a bucket of water.**
- For longer storage periods planting stock may be heeled in (see diagrams below).
-

Planting guidance: (see diagrams below)

- Ensure that no residual herbicides harmful to the planted species are present in the soil (check waiting period restrictions).
- When planting seedlings keep roots covered with wet peat moss, soil, etc.
- Make the hole deep enough so roots are not “J” or “L” rooted.
- Cut long straggly roots back to about 12 inches
- Remove one tree at a time from bucket only after hole is ready for tree.
- Keep foreign matter (leaves, sticks, rocks, and dry soil) out of hole.
- Place all tree toots in a downward position.
- Place tree in center of hole.
- Hold treetop upright while working soil around soil.
- Firm soil around toots by hand while filling hole, leaving no air space. Make sure to use moist soil.
- Bring soil level to root collar (look for color change on stem) above the first roots.
- Firm soil all around tree by hand to give good root to soil contact.
- In necessary scalp out an area the size of the hole in the fabric.
- Water seedling with plenty of water.

Tree/shrub protection:

- During establishment the trees/shrubs may need to be protected from deer and other herbivores. If excess damage occurs consider fencing.
- Avoid herbicide drift into tree/shrub area.
- Watch for damage from gophers, mice, and/or voles. May need to trap and/or poison rodents to protect seedlings.
- Examine trees/shrubs periodically for signs of insect or disease damage. Your local Extension Agriculture Agent can offer suggestions for controlling insects and diseases.



TREE/SHRUB ESTABLISHMENT

Conservation Practice Specification 612

APRIL 2003

PRACTICE APPROVAL:

Job Classification:

This job is classified as, Class

Show the limiting elements for this job.	Units
Area to be treated: < 1 acre	ac
Land slope: 25-45%	%
Plant Quality:	

LANDOWNER'S/OPERATOR'S ACKNOWLEDGEMENT:

The landowner/operator acknowledges that:

- a. He/she has received a copy of the drawings and specifications, and that he/she has an understanding of the contents, and the requirements.
- b. He/she has obtained all the necessary permits.
- c. No changes will be made in the installation of the job without prior concurrence of the NRCS.
- d. Maintenance of the installed work is necessary for proper performance during the project life.

I HAVE REVIEWED THIS PLAN AND AGREE TO INSTALL AS DESIGNED.

COOPERATOR:

DATE:

PRACTICE COMPLETION:

I have made an on site inspection of the site (or I am accepting owner/contractor documentation), and have determined that the job as installed does conform to the drawings and practice specifications.

Completion Certification by:

PLANNER:

DATE:



Natural Resources Conservation Service
Washington

TREE/SHRUB ESTABLISHMENT

Conservation Practice Specification 612

APRIL 2003

Diagram 1

Heeled In

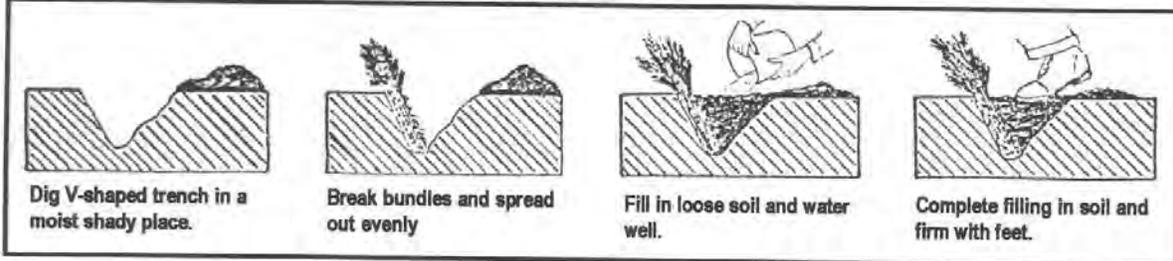
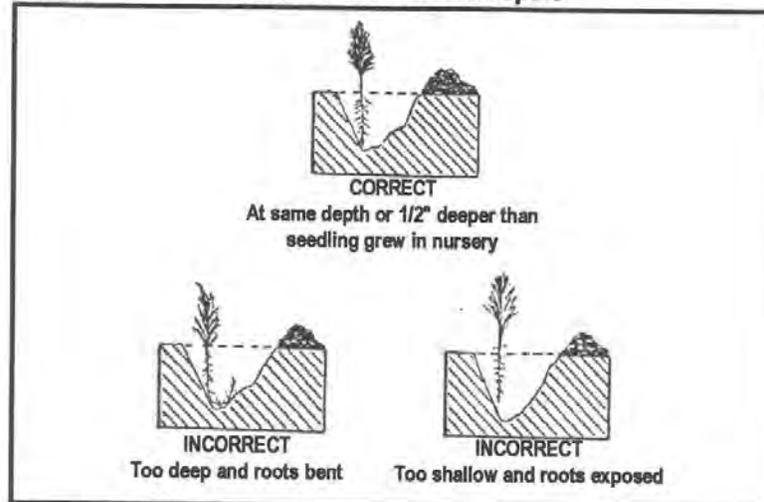


Diagram 2

Correct and Incorrect Depths



Mulching

EXAMPLE

Washington: Conservation Practice Job Sheet

WA-484

Definition:

Applying plant residues or other suitable materials produced off site, to the land surface.

Conservation Purposes:

- Conserve soil moisture
- Moderate soil temperature
- Provide erosion control
- Suppress weed growth
- Facilitate the establishment of vegetative cover
- Improve soil condition
- Reduce airborne particulates

Conditions where the practice applies:

This practice applies to all lands where mulches are needed. This practice may be used alone or in combination with other practices.

General criteria for all Filter Strip Designs:

Mulch materials shall consist of natural and/or artificial materials that are environmentally safe such as plant residue, wood bark or chips, gravel, plastic, fabric, rice hulls, or other equivalent materials

Mulch materials are supplied in sufficient dimension (depth or thickness) and durability to achieve the intended purpose for the required time period.

Prior to mulching, the soil surface and site shall be prepared to achieve the desired conservation purpose.

The mulch material shall be evenly distributed across the treatment area and anchored to the soil with tackifiers, emulsions, pinning, netting, crimping or other acceptable methods of anchoring to hold the mulch in place for specified periods.

As a minimum, manufactured mulches shall be applied according to the manufacturer's specifications.

Mulching operations shall comply with federal, state and/or local laws and regulations during the installation, operation and maintenance of this practice.

Mulch material shall be relatively free of disease, pesticides, chemicals, noxious weed seeds, and other pests and pathogens.



Additional Criteria to Conserve Soil Moisture

At least 60 percent surface cover, as mulch material, is maintained for the planned time period.

Additional Criteria to Moderate Soil Temperature

Mulch material is selected and applied to maintain 100 percent surface cover on the treated areas and is of sufficient thickness to persist for the time period required for the planned temperature modification.

Additional Criteria to Provide Erosion Control

The amount of Mulch material applied shall be determined using current erosion prediction technology and the planned soil loss objectives.

Mulch material: cereal grain straw or grass hay, apply an amount to achieve a minimum of 70 percent surface cover.

Mulch material: Wood products such as wood chips, bark, or shavings or other wood materials, apply a minimum 2-inch thickness.

Mulch material: gravel or other inorganic material apply a minimum 2 inch thickness and shall consist of pieces 0.75 to 2 inches in diameter.

Additional Criteria to Suppress Weed Growth

The thickness of mulch will be determined by the size of the plant being mulched.

Mulches shall be kept clear of the stems of plants where disease is likely to occur.

Mulches applied around growing plants or prior to weed seedling development shall have 100 percent ground cover. Thickness of the mulch shall be adequate to prevent emergence of targeted weeds.

Plastic mulches may be used.

Additional Criteria to Establish Vegetative Cover

The amount of Mulch applied achieves a minimum of 70 percent surface cover to provide protection from erosion and runoff; while allowing light and air flow to the seedbed to ensure proper germination and emergence.

Additional Criteria to Improve Soil Condition

Applied mulch materials shall have a C:N ratio that is less than 30:1.

Do not apply mulch with a C:N ratio that is less than 20:1 to an area of designed flow in watercourses.

Use the Soil Conditioning Index SCI to assess soil quality impacts and to determine the type and rate of the mulching material to reach the planned soil quality objectives.

Additional Criteria to Reduce Airborne Particulate Matter from Wind Erosion

Amount of Mulch applied shall be determined using current wind erosion prediction technology to reach the planned soil loss objectives.

PLANS AND SPECIFICATIONS

Specifications shall be prepared for each site and purpose and recorded using approved specification sheets, job sheets, technical notes, narrative statements in the conservation plan, or other acceptable documentation.

Documentation shall include:

- Purpose of the Mulch
- Type of mulch material used
- Percent surface cover or Thickness of mulch
- Timing of application
- Site preparation
- Mulch anchoring methods used
- Operation and maintenance.

OPERATION AND MAINTENANCE

Mulched areas shall be periodically inspected, and mulch is reinstalled or repaired as needed to accomplish the intended purpose(s).

Removal or incorporation of mulch materials shall be consistent with the intended purpose and site conditions.

Operation of equipment near and on the site shall not compromise the intended purpose of the mulch.

Prevent or repair any fire damage to the mulch material.

Properly collect and dispose of artificial mulch material after intended use.

Monitor and control undesirable weeds in mulched areas.

Mulching

EXAMPLE

Washington: Conservation Practice Job Sheet Specification

WA-484

Client / Business Name:	Pat Producer		
Operation Location:	Wenatchee	County	Chelan
Planning Assistance by:	Kim Planner	Date	March 2013

Attach Conservation Plan Map: Delineate and Identify Fields, Conservation management units (CMUs), soil information and Identified Mulching Treatment areas. Attach assessment tool results, such as Rusle2, used for planning. Additional map information includes topography, sensitive areas, existing buffers, profile view diagrams if appropriate.

Purposes and objectives for planning, design and application of this conservation practice:	
Primary Purpose:	* Conserve soil moisture
Other Purposes	* Suppress weed growth
Client Objectives:	Improve establishment and growth of shrub/forb pollinator planting (5 rows, 4 ft apart and 200 ft length (x 2))

Site Information	Treatment Area ID: Assoc. Ag Land - North	Treatment Area ID: Assoc. Ag Land - South	Treatment Area ID:
Mulch Treatment Area (acres, sq ft etc)	2000 sq feet	2000	
Width of Mulch Treatment area (ft)	20 ft	20 ft	
Soil and Slope range	Colockum silt loam 25-45%	Colockum silt loam 15-25%	
Annual Precipitation range	12 "	12	
% surface coverage by Mulch	100%	100	
Depth of Mulch material (inch, mm, etc)	3-5 mil	3-5 mil	
Timing of Mulching Activities	Feb – March	Feb - March	
Crop Description in Mulched area	Shrubs – caragana, buckwheat, rabbitbrush	Shrubs – caragana, buckwheat, rabbitbrush	
Planned Soil Erosion by Water (T/ac)	2.5 t/a		
Planned Wind Erosion est (T/ac)	0.2 t/a		
Planned Soil Conditioning Index SCI	1.5		

Site Preparation, Mulch material and application description and associated practices described for Identified Mulching Areas	
Site Preparation prior to Mulching for specific purpose (s).	Grass and other herbaceous cover should be mowed and removed from the site before fabric installation. The site needs to be smooth and firm so the fabric will lie flat against the ground.
Mulching Materials Description	Fabric should have a life expectancy of at least 5 years. Fabric must be capable of preventing underlying plant growth. Fabric may be pin-punched plastic, solid polyethylene, woven polypropylene, or other rot resistant material. It must prevent plant shoots from pushing through from below.
Mulch anchoring technique and planned effective time period	Create furrows in soil along edge of fabric. Press mulch into furrows and cover to secure edges. Stake fabric well. If fabric edges are not pressed into furrows and covered use staples, or equivalent, every 3-5 feet along edges to hold fabric down. Staples should also be placed every 10-15 in the middle of the fabric to prevent billowing by the wind. Fabric should not bridge over ridges or valleys. Make an "L" shaped cut in the fabric for the plant holes. Do not make just a slit.
Target weeds species	Downy brome, Japanese brome, prickly lettuce,

Soil Moisture conservation and water use efficiency planned.	Plan for mulch to reduce ET by 60%, to provide approx 4" per year additional soil moisture for young shrub establishment.
---	---

Mulching 484: Operation and Maintenance

Mulched areas will be periodically inspected, and mulch shall be reinstalled or repaired as needed to accomplish the intended purpose. Planned inspection schedule:

Removal of mulch materials shall be consistent with the intended purpose and site conditions and Properly collect and dispose of artificial mulch material after intended use. Planned collection and disposal schedule:

· Monitor and suppress undesirable weeds in mulched areas prior to and during the effective mulching period.

Other: **Monitor Mulch integrity June and October each year**

Client's Acknowledgement: (To be signed after Job sheet is completed and before practice installation.)

By signing below, I acknowledge that I:

- have reviewed and understand the site specific design, installation specifications and operation/maintenance requirements in this Job Sheet and have an understanding of the purposes and criteria for use of this conservation practice;
- will install, operate, and maintain this conservation practice in accordance with the site specific Job Sheet specifications.
- will make no changes to the planned design and installation without prior written approval of the Natural Resources Conservation Service.
- will obtain all necessary permits and/or rights, and comply with all ordinances and laws pertaining to the installation, operation, and maintenance of this conservation practice, prior to the start of installation; and
- will assume responsibility for notifying all Utilities affected by the installation, operation and maintenance of this conservation practice.

Signature _____ Date _____

Required Job Approval Authority or TSP Certification Category: Mulching 484

NRCS Job Approval Authority:
 (Job Class required for design and installation). (I, II, III, IV, or V).

Design:		Installation:	
Practice Units Description:	ACRES	Amount Applied	
Required Certification Categories for Technical Service Providers		Category for this Practice:	Land Treatment - Mulching

Practice Design Certification: (To be completed after Job Sheet is complete and before practice installation.)

By signing below, I certify that:

- The conservation practice planning and design outlined in this Job Sheet Specification meet the purposes, associated criteria, appropriate site conditions and client objectives; and
- I have the required Job Approval Authority or TSP certification required for this conservation practice design.

Signature _____ Date _____

Print Name _____ Title _____

Practice Installation Certification: (To be completed after practice installation and check out)

By signing below, I certify that:

- the practice has been installed according to the site specific installation requirements and specifications,
- required operation and maintenance requirements are being met; and
- I have the required Job Approval Authority or TSP Certification for this conservation practice installation

Signature _____ Date _____

Print Name _____ Title _____

USDA is an equal opportunity employer and service provider

Pollinator Habitat Enhancement CAP Conservation Plan Map



Elderberry Planting
Tree & Shrub Estab. (612)

200'x20' Hedgerow Planting,
Includes 490, 612, and 484
practices.

200'x20' Hedgerow Planting
Includes 490, 612, and 484
practices.

Pat Producer

60 30 0 60 Meters

Pollinator Habitat Enhancement Monitoring Form

Landowner Name _____ Tract _____ Field _____

Practice(s) Applied and Dates _____

_____ Year _____

Plant Establishment and Flowering Period

List species planted, rate establishment success and record flowering period start and end dates.

	Species Planted	Establishment				Flowering Period	
		None	Poor	Good	Excellent	Start Date	End Date
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							

Pollinator Visits

Record pollinator visitors, date range of visits and plant species visited.

	Pollinator	Visit Dates		Plants Visited
		First Seen	Last Seen	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

