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**Anchor QEA, LLC for Grant County Conservation District and Grant County**

**Funded By:**

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[Washington State Conservation Commission logo]
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Voluntary Stewardship Program Overview

**VSP is a non-regulatory, incentive-based approach to protect critical areas on agricultural lands, while maintaining agriculture viability.** VSP allows farmers to continue agricultural practices without regulation under Grant County’s Critical Areas Ordinance (CAO) by promoting voluntary stewardship strategies and practices by producers that protect critical areas and maintain and enhance agricultural viability.

VSP is allowed under a recent change in the Growth Management Act (GMA) and provides an alternative to traditional approaches to critical areas protection, such as protection buffers. VSP is intended to balance critical areas protection and agricultural viability at the County level through voluntary actions by agricultural producers, as illustrated in Figure 1. VSP is not a replacement for compliance with other laws and regulations, but participation in the program can often help agricultural producers comply with these requirements.

**Critical Areas per RCW 36.70A.020(5) include:**

- Wetlands
- Fish and wildlife habitat conservation areas
- Areas with a critical recharging effect on aquifers used for potable water
- Geologically hazardous areas
- Frequently flooded areas

Under VSP, critical areas on lands where agricultural activities are conducted are managed under this voluntary program. Lands used for non-agricultural purposes are regulated under Grant County’s Critical Areas Ordinance.
Voluntary Stewardship Program Overview

What are “agricultural activities” under VSP?

VSP applies to lands where agricultural activities are conducted, as defined in RCW 90.58.065. Agricultural activities mean agricultural uses and practices including, but not limited to:

- Producing, breeding, or increasing agricultural products, including livestock
- Rotating and changing agricultural crops
- Allowing land used for agricultural activities to lie fallow in which it is plowed and tilled but left unseeded
- Allowing land used for agricultural activities to lie dormant due to adverse agricultural market conditions
- Conducting agricultural operations

- Allowing land used for agricultural activities to lie dormant because the land is enrolled in a local, state, or federal conservation program, or the land is subject to a conservation easement
- Maintaining, repairing, and replacing agricultural equipment or facilities (provided the replacement facility is no closer to the shoreline than the original facility)
- Maintaining agricultural lands under production or cultivation

Figure 1
Balanced Approach of Critical Areas Protection and Agricultural Viability
Voluntary Stewardship Program Overview

Work Plan Background and Purpose

The guiding document for the VSP is the Grant County VSP Work Plan (Work Plan), the goal of which is to protect critical areas while maintaining the viability of agriculture. The Work Plan was developed by the Grant County VSP Work Group (Work Group), convened by the County and comprised of agricultural producers, local government elected officials and staff, agency representatives, and interest groups.

Work Plan Goals

One of the main goals of the Work Plan is to identify stewardship strategies and practices that are implemented under existing programs or voluntarily implemented, through producer funded practices, and identify future goals and benchmarks for continued protection and enhancement of the County’s critical area functions and values through implementation of key stewardship practices (Figure 2, Work Plan Sections 4 and 5).

Figure 2
VSP Crosswalk – Critical Areas Connection with Functions and Values

Failure of the Work Plan

For VSP to be successful, the Work Plan must protect critical areas functions and values as of July 22, 2011 (effect date of VSP legislation). Failure of the Work Plan will trigger a regulatory approach to critical areas protection under the Growth Management Act, which includes mandated regulation on critical areas, such as buffers and setbacks. Additionally, regulation of critical areas on agricultural lands through the Growth Management Act does not take agricultural viability into account and does not encourage outreach or technical assistance for agricultural operators. Therefore, it is in the best interest of agricultural operators to ensure the success of the VSP.
Grant County Work Plan Executive Summary
Voluntary Stewardship Program

Work Plan Organization

The Work Plan includes the information necessary to fulfill the law’s requirements outlined under the Revised Code of Washington (RCW) 36.70A.720(1)(a through l). These requirements state that VSP Work Plans include critical area protection and enhancement goals with measurable benchmarks, and an implementation, reporting, and tracking framework. See below for description of the VSP Work Plan organization.

Grant VSP Work Plan Organization

► **Section 1 – Introduction**: Background on VSP regulation and how it applies to the County

► **Section 2 – Grant County Regional Setting**: Overview of County conditions, including description of critical areas

► **Section 3 – Baseline and Existing Conditions**: Description of county-wide critical areas presence and functions and values as of 2011

► **Section 4 – Protection and Enhancement Strategies**: Description of currently implemented stewardship practices that protect and enhance critical areas functions and values

► **Section 5 – Goals, Benchmarks, and Adaptive Management**: Description of VSP goals for critical area protection and enhancements, measurable benchmarks, and indicators and methods for adaptive management

► **Section 6 – Implementation**: Detailed plan outlining implementation of VSP actions by the VSP Lead

► **Appendices**: Additional detailed information referenced by the above sections
Implementation

The Work Group is responsible for overseeing the implementation of the Work Plan. The Work Group has identified the Grant County Conservation District as the VSP coordinator and technical lead to implement the program described in the Work Plan on behalf of the Work Group and lead the data collection and reporting tasks.

Agricultural producers play the most integral role in Work Plan implementation. Success of the VSP relies on these producers to voluntarily implement conservation actions that help meet Work Plan goals and benchmarks for critical areas protection and agricultural viability. Many producers are already implementing conservation actions, which are currently protecting critical areas and supporting agricultural viability. The VSP aims to:

1. Better identify and document the existing measures that have been put in place since 2011 through private-sector activity and outside of government programs.

2. Increase the level of participation among agricultural producers in implementing stewardship practices.

Work Plan implementation is expected to continue largely through programs and organizations which already protect and, in many cases, enhance critical areas and maintain agricultural viability. The Work Plan has been designed to track protection and enhancement of critical areas by documenting critical areas baseline conditions, establishing goals and measurable benchmarks, identifying conservation activities, and establishing monitoring and adaptive management measures. The tracking timeframe for this Work Plan is the first 10 years of implementation.

VSP Checklist

The VSP Checklist is a helpful tool to help assess how the VSP could apply to individual agricultural producers. It includes additional examples of stewardship practices that protect and enhance critical areas and promote agricultural viability.

Participation in Programs

Private, federal, state, and local government programs and opportunities are available to support producers in addressing agricultural and resource concerns. See the VSP Checklist for additional resources and technical assistance available to agricultural producers on a voluntary basis. Participation in a government-funded program is not required to be a VSP participant.
Grant County Regional Setting

Grant County Profile

Grant County is located in central Washington and bound by the Columbia River to the west and southwest. Agriculture, land use, hydrology, and habitat in the County are heavily influenced by the Columbia Basin Project (CBP), which delivers water from the Grand Coulee Dam for agricultural and municipal uses. The CBP also brought about major changes to the hydrology and land use in the region through the diversion of water to the historically semi-arid region.

Columbia Basin Project

The Columbia Basin Project (CBP) is a network of dams, pumping plants, and irrigation canals and reservoirs that provide irrigation water over 670,000 acres. The water for these facilities is supplied by Grand Coulee Dam and Franklin D. Roosevelt Lake. Once water enters the irrigation system, it is used multiple times, through runoff, collection in reservoirs, and reuse, before returning to the Columbia River. In total, irrigators use approximately 2.5 million acre feet (annually) of water though the CBP. In addition to providing irrigation water to Grant County, the CBP also generates power, provides recreation opportunities, controls floods, and aids navigation (Reclamation 2016).
**Grant County Regional Setting**

**Grant County Profile**

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**Water Resources and Precipitation**

**Water Resources** – The County includes portions of six watersheds, which are known as Water Resource Inventory Areas (WRIAs). Most of the County is in the Lower Crab (WRIA 41). The southern portion of the County is in the Esquatzel Coulee (WRIA 36). The northern portion of the County is largely in the Grand Coulee (WRIA 42), with portions in the Upper Crab-Wilson (WRIA 43), Moses Coulee (WRIA 44), and Lower Lake Roosevelt (WRIA 53) (Figure 3).

**Precipitation** – Precipitation ranges from less than 8 inches of annual precipitation in the central and southern portion of the County (near Mattawa and the Royal Slope) to greater than 12 inches in the northeast portion of the County (Figure 3).

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**Soils and Terrain**

**Soils and Terrain** – The northern portion of the County is characterized by hilly topography and soils that formed in wind-blown sediments, known as loess, dissected by channeled scablands largely stripped of soils by glacial floodwaters (Figure 4). Soils in this region are primarily used for dryland farming, livestock, and wildlife habitat near the Columbia River. The southern portion of the County consists of smooth plains (southward-sloping) periodically broken up by the Frenchman Hills and Saddle Mountains (USDA 1984).
Grant County Regional Setting
Grant County Profile

Land Use and Landcover

Land Use/Landcover – The County is predominantly an agricultural landscape. Landcover is comprised of crops and rangeland on larger land tracts outside of cities and towns. The three largest cities in the County are Moses Lake, Ephrata, and Quincy, where the majority of housing, commercial, and industrial activities are centered.

Agriculture on privately owned lands comprises approximately 68% of the County’s landcover, which is generally associated with one of these three categories (Figure 5):
- Dryland – Crops
- Irrigated – Crops
- Rangeland

Major Resource Concern – Wind-induced soil erosion is a major management concern within the County, where 92% of the County is classified under moderate to high wind-erosion susceptibility (NRCS 2015), which includes 38% of privately owned agricultural lands. The central areas, southwest of Moses Lake, which include soils largely comprising fine sands or sandy loams in areas with high winds, are the most susceptible to soil loss from wind erosion.

Section 3 includes further discussion on where these areas intersect with agricultural lands.
Agricultural Activities and Viability

Agriculture is the major land use in the County. The VSP law is explicit in the protection of critical area functions and values while also, “maintaining and improving the long-term viability of agriculture” (RCW 36.70A.700). Both objectives, critical area function protection and maintaining agricultural viability, have to be met in the Work Plan. The Work Plan’s goals and measurable benchmarks for voluntary landowner participation apply to agricultural producers on privately-owned land in unincorporated areas of the County, which comprise approximately 68% of the County’s lands.

Agricultural Activities

Grant County has highly productive irrigated agricultural lands due to the consistent water supply from the CBP, favorable climate, and highly productive soils. Grant County crop lands produce approximately 76% of the value of products sold in the County (USDA 2012). Rangelands account for 23% of County land, and County-wide livestock sales account for approximately 24% of the value of products sold (USDA 2012). See Figure 5 for the County agricultural landcover map.

Sources:
WSDA Agricultural Landcover Data 2011
USDA 2012
Agricultural Viability

Agricultural viability in the County can include regional and individual farm elements.

- **At a regional level**, agricultural viability is the regional support system sustaining production and providing the services, conditions, land base, and infrastructure for individual farms to succeed.

- **At the farm level**, agricultural viability rests mostly on the productivity of the land and the ability of the operator to balance input costs with sales and market conditions.

Critical areas protection is balanced with maintaining agricultural viability when stewardship activities are conducted in a manner that keeps land in production, provides producers with the flexibility to implement stewardship strategies and practices that fit with their business goals, and provides certainty for future business decisions.

Grant County is unique in that irrigation supply from the CBP, combined with the soils and growing climate allow for tremendous agricultural opportunity and crop diversity. These are important factors in considering agricultural viability. The Work Plan places emphasis on agricultural systems, practices, flexibility, incentives, and other opportunities mutually beneficial to agricultural viability and critical areas protections, supporting continued agricultural viability in the County. Table 1 provides a summary of agricultural viability strengths, weaknesses, opportunities, and threats based on input from local agricultural producers (Dormaier 2016; Kraurscheid 2016; Leitz 2016).

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
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<tbody>
<tr>
<td>Reliable water source from the Columbia River</td>
<td>Reliance on export of products</td>
</tr>
<tr>
<td>Reliable climate (dry fall weather)</td>
<td>Incentivizing younger generations to farm</td>
</tr>
<tr>
<td>Strong infrastructure</td>
<td>High land prices</td>
</tr>
<tr>
<td>Transportation access (air, rail, interstate)</td>
<td>Distance from large market centers</td>
</tr>
<tr>
<td>High-speed Internet access</td>
<td>Little control over the price of commodities</td>
</tr>
<tr>
<td>Abundant, cheap electricity</td>
<td>High purchasing costs for new technologies</td>
</tr>
<tr>
<td>Diverse agricultural support industry</td>
<td>Costs associated continued operation and maintenance of stewardship practices and systems</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural processing facilities closer to producers</td>
<td>Loss of small-sized producers</td>
</tr>
<tr>
<td>Expansion into the vegetable market</td>
<td>High capitol producers coming from California</td>
</tr>
<tr>
<td>Vertical integration of individual farms</td>
<td>Land conversion and rising land prices</td>
</tr>
<tr>
<td>Education opportunities for new ideas</td>
<td>Groundwater shortage</td>
</tr>
<tr>
<td>New technologies such as precision agriculture</td>
<td></td>
</tr>
<tr>
<td>Big Bend Community College</td>
<td></td>
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<tr>
<td>Eco-marketing</td>
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</table>
Critical Areas Definitions

Critical areas perform key functions that enhance the environment (e.g., water quality and fish and wildlife habitat) and provide protections from hazards (e.g., flood, erosion, or landslide hazards). The five critical areas that are specifically defined under the GMA (RCW 36.70A.030) include: 1) wetlands; 2) fish and wildlife habitat conservation areas (habitat areas); 3) critical aquifer recharge areas (recharge areas); 4) geologically hazardous areas (geohazard areas); and 5) frequently flooded areas (flood areas).

- **Wetlands**
  - Wetlands are areas inundated or saturated by surface water or groundwater for at least part of the growing season and support vegetation adapted for life in saturated soil conditions.
  - Some irrigation-influenced artificial wetlands may be exempt from this designation (see Washington State Department of Ecology guidance). 
  - **Functions**: Water quality, hydrology, and habitat

- **Habitat Areas**
  - Habitat areas are lands and waters that provide habitat to support fish and wildlife species throughout their life stages. These include ranges and habitat elements where endangered, threatened, and sensitive species may be found, and areas that serve a critical role in sustaining needed habitats and species for the functional integrity of the ecosystem, and which, if altered, may reduce the likelihood that the species will persist over the long term.
  - **Functions**: Water quality, hydrology, soil, and habitat

- **Recharge Areas**
  - Recharge Areas are areas that have a critical recharging effect on aquifers used for drinking water, including aquifers vulnerable to contamination or that could reduce supply by reducing recharge rates and water availability.
  - **Functions**: Water quality and hydrology

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2. Critical flood areas include 100-year floodplains and floodways mapped through the Federal Emergency Management Agency or as delineated through the County’s Comprehensive Flood Management Plan.
Geohazard areas are areas susceptible to erosion, sliding, and other geological events. In Grant County, designated geohazard areas related to agricultural activities are primarily associated with erosion hazard areas, which include high to very-high water erosion hazards. Wind is the major source of erosion in Grant County. Although wind erosion potential areas are not specifically designated as critical areas, they are discussed under geohazard areas in this VSP.

**Functions**: Water quality, hydrology, soil, and habitat

Flood areas include 100-year floodplains and floodways, and often include the low-lying areas adjacent to rivers and lakes that are prone to inundation during heavy rains and snowmelt. These can include streams, rivers, lakes, wetlands, and areas where high groundwater forms ponds.

**Functions**: Water quality, hydrology, soil, and habitat

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**Critical Areas Functions and Values**

Critical areas provide important functions and values for the environment. The goals and benchmarks developed for the Work Plan are based on protection and enhancement for the four primary functions provided by the County’s five critical areas, which include:

- Water quality through filtration and retention of fine sediments, excessive nutrients, and other pollutants, as well as temperature regulation through canopy shade
- Hydrology through the delivery, movement, and storage of water
- Soil through the preservation of soil and the quality of the underground living ecosystem, which preserves plants, animals, and human life
- Habitat through the natural environments in which a species or populations can live
Baseline and Existing Conditions

Wetlands

Wetlands are mapped on 0.6% of the County’s total agricultural lands, which represents only 10% of all wetlands found within the County.

Irrigation-influenced Wetlands

Many wetlands within Grant County are considered unintentional wetlands, resulting from localized conditions such as unlined irrigation ditches and tailwater from surface irrigated fields. These types of wetlands are considered jurisdictional wetlands regulated by state wetland law. However, if the irrigation practices and infrastructure upgrades are changed (such as implementation of water stewardship practices and lining and piping of ditches) and the wetland dries up and no longer performs wetland functions, then no mitigation is required (Ecology 2010).
Baseline and Existing Conditions

**Habitat Areas - Streams and Riparian Areas**

Habitat areas include streams, riparian vegetation, and upland habitats that provide water quality, hydrology, soil, and habitat functions.

Of the total stream miles mapped within the County, 62% are within agricultural lands (Figure 6). Approximately 50% of the County’s streams with riparian vegetation are within agricultural lands (Appendix A, Figure 5; USGS 2011). The extent of streams and riparian vegetation within the County are significantly influenced by return flows from the Columbia Basin. Habitat areas do not include irrigation delivery systems per RCW 36.70a.030(5).

<table>
<thead>
<tr>
<th>Distribution of Streams in Each Agricultural Type</th>
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<tr>
<td>Dryland Crops</td>
</tr>
<tr>
<td>42%</td>
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**Characteristics of Streams and Riparian Areas on Agricultural Lands**

**Streams:**
- The Columbia River supports more than 40 fish species, including individuals from 14 families of freshwater fishes, and 6 anadromous species (Chinook salmon, sockeye salmon, coho salmon, steelhead, and pacific and river lamprey; Anchor QEA 2013)
- Fall Chinook salmon are known to spawn within the Grant County reach of the Columbia River, while other anadromous species rely on the river as a migration corridor
- Lower Crab, Sand Hollow, and Trinidad Creeks support anadromous fish, including fall Chinook salmon (Lower Crab) and summer steelhead (all three streams; Anchor QEA 2013)

**Riparian vegetation:**
- Primarily herbaceous shrub lands comprising sedge and rush species
- Can include willows, rose, water birch, black cottonwood, aspen, hawthorn, and service berry (KWA Ecological Sciences 2004)

**Note:**
A. Although irrigation canals, laterals, and ditches created as a part of the Columbia Basin Project provide fish and wildlife habitat, they are not considered habitat areas under critical areas definitions (RCW 36.70a.030(5)).
Baseline and Existing Conditions

Habitat Areas - Priority Habitats and Species

Priority Habitats and Species mapped areas are the largest critical area found within the County and are found within 10% of agricultural lands when habitat associated with game species such as mule deer, Northwest whitetail deer, or chukar are excluded. Priority game species are mapped in 16% of the County’s agricultural lands and these areas largely overlap with other mapped Priority Habitats and Species areas. These game species are highly prevalent throughout the County, particularly on and around agricultural lands and adjacent riparian and upland habitats.

Priority Habitats and Species on Agricultural Lands

General locations/distribution
- Consists of mostly mammal habitat (largely game species such as mule deer) and game birds such as chukar along the Columbia River, the Grand Coulee, and near the Potholes Reservoir
- Bird habitat, including bald eagles and waterfowl, are concentrated around the Potholes Reservoir
- Sage-grouse habitat can be found along the Grand and Moses Coulees

Characteristics
- Includes ponds, riparian habitats, and upland habitats, including large amounts of shrub-steppe habitat surrounding the Potholes Reservoir, along Lower Crab Creek, and the Columbia River
- Excluding game species habitats that cover large areas of the County, the most prevalent habitat areas are bird habitat, including approximately 80,000 acres of sage-grouse habitat

Figure 7
Priority Habitat and Species Map

<table>
<thead>
<tr>
<th>Priority Habitats and Species (PHS)</th>
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<tbody>
<tr>
<td><strong>Birds</strong></td>
</tr>
<tr>
<td><strong>Amphibians and Reptiles</strong></td>
</tr>
<tr>
<td><strong>Cliffs/bluffs</strong></td>
</tr>
<tr>
<td><strong>Shrub-steppe</strong></td>
</tr>
<tr>
<td><strong>Other Species and Habitats</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHS - Species of Recreational, Commercial, or Tribal Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Birds:</strong> Barrow’s Goldeneye, Chukar</td>
</tr>
<tr>
<td><strong>Mammals:</strong> Mule Deer, Rocky Mountain Elk, White-tailed Jackrabbit</td>
</tr>
</tbody>
</table>
Baseline and Existing Conditions

**Flood Areas**

Flood areas protect public health and safety by providing temporary flood water storage and conveyance. They also provide riparian habitat and other wildlife benefits and can improve water quality and recharge groundwater. Flood areas are found within only 2% of the County’s total agricultural lands. Flood areas typically overlap or are adjacent to wetlands and some habitat areas.

**Distribution of Flood Areas in Each Agricultural Type**

- **Dryland Crops**: 39%
- **Irrigated Crops**: 34%
- **Rangeland**: 27%

**Figure 8**
Flood Areas Map
Baseline and Existing Conditions

Geohazard Areas (Erosion Hazards)

Severe to very severe water erosion potential areas are designated as erosion hazard areas within the County and are found within 22% of the County’s total agricultural lands. In recent years, loss of soils due to water- or irrigation-induced erosion has declined due to upgrades in irrigation systems (sprinklers) and overall improvement in irrigation water management. High wind erosion potential areas are found within 38% of the County’s agricultural lands. Although wind erosion potential areas are not officially designated as erosion hazard areas within the County’s critical areas code, they are still considered within the Work Plan because they pertain to agricultural viability. Soil conservation is a key contributor to agricultural viability in the County.

Geohazard Areas on Agricultural Lands

Characteristics: County soils are generally characterized by loess, which are very deep, fertile, and highly erodible soils deposited through lake settling or by wind from the post glacial outwash.

Distribution of Geohazard Areas in Each Agricultural Type: Water Erosion Potential

- **Dryland Crops**: 53%
- **Irrigated Crops**: 40%
- **Rangeland**: 7%

![Water Erosion Potential Map](image)
Baseline and Existing Conditions

Geohazard Areas (Erosion Hazards)

Distribution of Geohazard Areas in Each Agricultural Type: Wind Erosion Potential

- Dryland Crops: 18%
- Irrigated Crops: 15%
- Rangeland: 67%

Geohazard Areas for Seismic and Landslide Hazards

Geohazard areas for landslide and seismic hazard areas are of limited concern because these hazards are traditionally considered under the Growth Management Act as areas to avoid building structures on or to include additional requirements to protect structures from earthquake, landslide, or other geologic hazards. Under the Work Plan, structures in agricultural lands will continue to be permitted and regulated through the County’s critical areas code.

Figure 10
Wind Erosion Susceptibility Map

- Relative Susceptibility: 1 More, 2, 3, 4, 4L Moderate, 5 - 8 Less (Not Mapped)
Recharge Areas

Grant County is within the Columbia Basin Ground Water Management Area whose main goal is to protect groundwater and address groundwater issues. Recharge areas provide protections to public drinking water supplies and are found within 2% of the County’s total agricultural lands, primarily associated with wellhead protection areas mapped for the public drinking water supply. Other recharge areas in the County consist of Group B wells with a wellhead protection plan filed with the Grant County Health District and areas with high potential for aquifer recharge.

Recharge Areas on Agricultural Lands

| Risks associated with agriculture | Most are located in areas where potential contaminants on the land surface, such as fuel, pesticide, or fertilizer, could potentially infiltrate into public drinking water supplies |

Distribution of Recharge Areas in Each Agricultural Type

- Dryland Crops: 32%
- Irrigated Crops: 54%
- Rangeland: 14%

*Figure 11* Recharge Areas Map
Agricultural producers play a major role in the stewardship and management of private lands and resources within Washington State and Grant County. Agricultural producers are continually improving agricultural practices, applying new science and technologies, and implementing stewardship practices that reduce agricultural impacts on critical areas, as well as maintain or increase the viability of the agricultural economy.

In Grant County, agricultural producers have adopted a variety of practices to address many of the major resource concerns within the County, including practices to improve irrigation water management and habitat, reduce soil erosion, and improve soil quality.

**VSP Crosswalk – Critical Areas Connection with Functions and Values**
Maintaining Agricultural Viability and Protecting Critical Area Function through Stewardship Practices

Irrigation Management

Managing water volume, frequency, and application rate for efficiency

Applicability: D I R

Critical Area Functions

- Water Quality: Reduces runoff and erosion
- Hydrology: Reduces degradation of surface and groundwater resources
- Soil: Manages leaching of salt and chemicals below the root zone

Agricultural Viability

- Soil quality and conservation
- Yield and fertility
- Reduced inputs

Residue and Tillage Management

Managing crop and plant residue and limiting soil disturbance (e.g., no-till or reduced-till)

Applicability: D I R

Critical Area Functions

- Water Quality: Reduces runoff and erosion
- Hydrology: Increases infiltration and decreases evapotranspiration to increase water availability
- Soil: Reduces soil disturbance and increases cover to reduce wind and water erosion
- Habitat: Provides food and cover for wildlife
- Increases water availability

Agricultural Viability

- Soil quality and conservation
- Weed management
- Yield and fertility
Grant County Work Plan Executive Summary
Voluntary Stewardship Program

Baseline and Existing Conditions
Maintaining Agricultural Viability and Protecting Critical Area Function through Stewardship Practices

Chemical Management
Managing pesticide use and application of nutrients to reduce runoff

Applicability: D I R

Critical Area Functions
- Water Quality
  - Residual pesticides decrease in surface and groundwater
  - Reduces nutrients in surface and groundwater
- Soil
  - Decreases wind and water erosion due to changes in pest management
  - Reduces the negative effects of pests on food quantity and quality
  - Optimizes health and vigor of desired plant species
  - Increases food and cover for wildlife
- Habitat

Agricultural Viability
- Soil quality
- Yield and fertility
- Weed management
- Pollinator/beneficial organisms
- Reduced inputs

Dryland Crops I Irrigated Crops R Rangeland

Prescribed Grazing
Managing grazing and vegetation harvest to improve plant communities and manage weeds

Applicability: D I R

Critical Area Functions
- Water Quality
  - Reduces runoff and erosion
  - Reduces transport of nutrients and sediment
- Hydrology
  - Increases infiltration and water availability
- Soil
  - Decreases water and wind erosion due to increased vegetation cover
  - Reduces stream erosion through enhanced riparian vegetation
- Habitat
  - Improves and maintains health and vigor of desired plant species
  - Restores desired habitats, such as shrub-steppe
  - Helps maintain adequate water availability

Agricultural Viability
- Soil quality and conservation
- Weed management
- Yield and fertility
Goals and Benchmarks

The Work Plan includes goals and benchmarks for the protection and enhancement of critical areas. The benchmarks must be measurable and designed to result in the protection of critical area functions and values and the enhancement of critical areas functions and values through voluntary, incentive-based measures.

**VSP Crosswalk – Stewardship Practices Connection with Goals and Benchmarks**
Protection and Enhancement Goals

Wetland Goal

- Protect and/or enhance wetland functions
- Special emphasis on key functions such as reducing siltation and erosion, providing water filtration, storing floodwaters and maintaining baseflows, and providing habitat for fish and wildlife.

Habitat Goal

- Protect and/or enhance habitat area functions
- Special emphasis on key functions such as providing vegetative cover that reduces erosion and siltation, moderates water temperature by providing shade, and provides refuge, nesting, and rearing areas for wildlife, as well as providing aquatic habitat protections such as supplying organic inputs (e.g., leaf fall, insects, and large wood), providing spawning, rearing, and migratory habitat for fish.

Recharge Area Goal

- Protect and/or enhance recharge area functions
- Special emphasis on key functions such as providing areas of water infiltration through the soil column and underlying geology which improves groundwater quality and recharging groundwater resources.

Geohazard Area Goal

- Protect and/or enhance geohazard area (erosion hazard) functions
- Special emphasis on key functions provided by geohazard areas for erosion hazards, such as reducing the rate of soil erosion and sediment movement and deposition in surface waterbodies, facilitating groundwater infiltration, and reducing surface water runoff and erosion.

Flood Area Goal

- Protect and/or enhance flood area functions
- Special emphasis on key functions provided by flood areas such as providing vegetation near waterbodies to retain soil and promote sediment deposition, moderating water temperature through share and groundwater inputs, reducing stream velocities and discharge rates, promoting groundwater recharge, supporting soils moisture and plant growth, and providing habitat for fish and wildlife.
**Key Stewardship Practices and Measurable Benchmarks**

The Work Plan’s key stewardship strategies (Table 3) and protection and enhancement benchmarks (Table 4) further the goals of the Work Plan. As discussed in previous sections, the key stewardship practices that have been identified in the Work Plan are widely implemented within the County and promote agricultural viability for producers. Table 3 summarizes some examples of key stewardship practices that have been applied by agricultural producers in the County. This table helps illustrate the types of practices that have been or can be implemented to protect critical areas functions. Special emphasis is placed on areas where practices can be implemented within or directly adjacent to a critical area (see Figure 12 for a conceptual representation). An example of a direct effect would be implementing wetland restoration practices within or adjacent to an existing wetland critical area. Indirect effects occur within agricultural areas that are not adjacent to or within critical areas.

**Table 3**

<table>
<thead>
<tr>
<th>Stewardship Strategy</th>
<th>Water Quality Effect</th>
<th>Hydrology Effect</th>
<th>Soil Effect</th>
<th>Habitat Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil Management</td>
<td>■■</td>
<td>■</td>
<td>■■</td>
<td>■</td>
</tr>
<tr>
<td>Water Management(^1)</td>
<td>■■</td>
<td>■■</td>
<td>■</td>
<td>■■</td>
</tr>
<tr>
<td>Nutrient Management</td>
<td>■■■</td>
<td>■■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Pest Management</td>
<td>■■■</td>
<td>■■</td>
<td>■</td>
<td>■■</td>
</tr>
<tr>
<td>Residue and Tillage Management</td>
<td>■■</td>
<td>■</td>
<td>■■</td>
<td>■■</td>
</tr>
<tr>
<td>Range Management(^1)</td>
<td>■</td>
<td>■</td>
<td>■■</td>
<td>■■</td>
</tr>
<tr>
<td>Habitat Management</td>
<td>■■</td>
<td>■</td>
<td>■■</td>
<td>■■</td>
</tr>
</tbody>
</table>

**Beneficial Effects:**
- High: ■■■■
- Medium: ■■
- Slight: ■

**Adverse Effects:**
- Netural or No Effects: ■■■■
- Slight: ■
- Medium: ■■
- High: ■■■

**Note:**
1. Management stewardship focuses on key practices that address on-field resource concerns and management where irrigation activities or livestock management practices are already occurring. Conveyance infrastructure, such as irrigation or livestock pipelines, are not considered in the group of key practices.
Table 4 includes the Work Plan’s protection and enhancement benchmarks based on agricultural producer participation in key stewardship practices. Stewardship practices along with these benchmarks are intended to further the Work Plans goals.

### Table 4
**Protection and Enhancement Benchmarks**

<table>
<thead>
<tr>
<th>Stewardship Strategies</th>
<th>Benchmarks&lt;sup&gt;1,2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td></td>
</tr>
<tr>
<td>Soil Management</td>
<td></td>
</tr>
<tr>
<td>• Protection</td>
<td>No net loss in acres under soil management</td>
</tr>
<tr>
<td>• Polyacrylamides</td>
<td></td>
</tr>
<tr>
<td>Water Management&lt;sup&gt;3&lt;/sup&gt;</td>
<td>No net loss in acres under water management</td>
</tr>
<tr>
<td>• Irrigation</td>
<td></td>
</tr>
<tr>
<td>• Sprinkler System</td>
<td></td>
</tr>
<tr>
<td>Nutrient Management</td>
<td>No net loss in acres under nutrient management</td>
</tr>
<tr>
<td>• Nutrient Management</td>
<td></td>
</tr>
<tr>
<td>Pest Management</td>
<td>No net loss in acres under pest management</td>
</tr>
<tr>
<td>• Pest Management</td>
<td></td>
</tr>
<tr>
<td>Residue and Tillage Management</td>
<td>No net loss in acres under residue and tillage management</td>
</tr>
<tr>
<td>• Residue and Till</td>
<td></td>
</tr>
<tr>
<td>• Mulch Till</td>
<td></td>
</tr>
<tr>
<td>• Direct Seed</td>
<td></td>
</tr>
<tr>
<td>Range Management&lt;sup&gt;3&lt;/sup&gt;</td>
<td>No net loss in acres under livestock/range management</td>
</tr>
<tr>
<td>• Range Planting</td>
<td></td>
</tr>
<tr>
<td>• Prescribed Grazing</td>
<td></td>
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<tr>
<td>• Watering Facility</td>
<td></td>
</tr>
<tr>
<td>Habitat Management</td>
<td></td>
</tr>
<tr>
<td>• Conservation Cover</td>
<td>No net loss of acres under habitat management.</td>
</tr>
<tr>
<td>• Stream Habitat</td>
<td></td>
</tr>
<tr>
<td>• Improvement and</td>
<td></td>
</tr>
<tr>
<td>• Management</td>
<td></td>
</tr>
<tr>
<td>• Riparian Herbaceous</td>
<td></td>
</tr>
<tr>
<td>• Cover</td>
<td></td>
</tr>
<tr>
<td>• Tree/Shrub Establishment</td>
<td>No net loss of feet providing habitat management</td>
</tr>
<tr>
<td>• Restoration of Rare</td>
<td></td>
</tr>
<tr>
<td>• Declining Habitats</td>
<td></td>
</tr>
<tr>
<td>• Upland Wildlife</td>
<td></td>
</tr>
<tr>
<td>• Habitat Management</td>
<td></td>
</tr>
<tr>
<td>• Fence</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. Key practices include those that address resource concerns and critical areas function protections and are widely implemented, anticipated for continued application, or identified as major practice trends anticipated in the future.

2. Measurable benchmarks are based upon the historic Natural Resources Conservation Service participation data (2011-2016) in key practices (see Note 1). No net loss and enhancements will be measured based on estimated annual disenrollment rates for key practices from the 2011 baseline.

3. Management stewardship focuses on key practices that address on-field resource concerns and management where irrigation or livestock management activities are already occurring. Conveyance infrastructure, such as irrigation and livestock pipelines contracted under Natural Resources Conservation Service (approximately 3,000 feet in 2011–2016) are not included in measurable benchmarks.
References


