March 2018
Franklin County Voluntary Stewardship Program

ANCHOR QEA

Work Plan

Prepared for the Franklin Conservation District and the Washington State Conservation Commission

March 2018
Franklin County Voluntary Stewardship Program

Work Plan

Prepared for
Franklin Conservation District
1724 E. Superior Street
Pasco, Washington 99301

Prepared by
Anchor QEA, LLC
8033 W. Grandridge Boulevard, Suite A
Kennewick, Washington 99336

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ABBREVIATIONS

AWEP	Agricultural Water Enhancement Program
CAA	Clean Air Act
CARA	critical aquifer recharge area
CBP	Columbia Basin Project
County	Franklin County
CPPE	Conservation Practice Physical Effect
CRP	Conservation Reserve Program
CSP	Conservation Stewardship Program
CWA	Clean Water Act
Ecology	Washington State Department of Ecology
EQIP	Environmental Quality Incentives Program
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FFA	frequently flooded area
FSA	Farm Service Agency
FCD	Franklin Conservation District
GHA	geologically hazardous area
GMA	Growth Management Act
GWMA	Ground Water Management Area
HCA	fish and wildlife habitat conservation area
HEL	highly erodible land
ISP	Individual Stewardship Plan
NAIP	National Agriculture Inventory Program
NRCS	Natural Resources Conservation Service
PHS	Priority Habitats and Species
RCW	Revised Code of Washington
SCBID	South Columbia Basin Irrigation District
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
VSP	Voluntary Stewardship Program
WDFW	Washington Department of Fish and Wildlife
WHIP	Wildlife Habitat Improvement Program
Work Group	Franklin County VSP Work Group
Work Plan	Franklin County VSP Work Plan
WRIA	Water Resource Inventory Area
WSCC	Washington State Conservation Commission
WSDA	Washington State Department of Agriculture

Prepared by:

Franklin County VSP Work Group

Debbie Berkowitz, Lower Columbia Basin Audubon Society
Brian Cochrane, Dryland Wheat
Kent McMullen, Franklin County Natural Resource Advisory Council
Commissioner Rick Miller, Franklin County
Mark Nielson, Franklin County Water Conservancy Board
Mark Wieseler, Franklin Conservation District
Dave Solem, South Columbia Basin Irrigation District
James Alford, Franklin County Farm Bureau
Matt Harris, Washington State Potato Commission
Tim Waters, WSU Extension
Case VanderMeulen, Dairy
Michael Ritter, Washington Department of Fish and Wildlife

VSP Work Group Alternates

Rick Leaumont, Lower Columbia Basin Audubon Society
Romona Rommereim, Franklin County Natural Resource Advisory Council
Lee Morris, Franklin County Water Conservancy Board

Anchor QEA, LLC for Franklin Conservation District

Funded by:

Washington State Conservation Commission

1 Introduction

The Washington State Growth Management Act (GMA) was adopted by the Washington State Legislature in 1990. The GMA provides for citizens, communities, local governments, and the private sector to cooperate and coordinate in comprehensive land-use planning. The GMA requires county and local governments to adopt development regulations that protect critical areas.

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

Critical areas on agricultural lands are protected under this voluntary program. Lands used for non-agricultural purposes and structures requiring building permits are regulated under Franklin County's Critical Areas Ordinance.

In 2011, the Legislature amended the GMA with the intent to protect and enhance critical areas in places where agricultural activities are conducted, while maintaining and improving the long-term viability of agriculture. This amendment established the Voluntary Stewardship Program (VSP), a new, non-regulatory, and incentive-based approach that balances the protection of critical areas on agricultural lands while promoting agricultural viability. VSP presents a unique opportunity to address an important environmental topic that has been a source of controversy in recent decades—how to protect and/or enhance critical areas on agricultural lands while keeping agriculture economically viable (Schultz and Vancil 2016).

What are considered "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
- 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
- Conducting agricultural operations
- Maintaining, repairing, and replacing agricultural equipment; maintaining, repairing, and replacing agricultural facilities, provided the replacement facility is no closer to the shoreline than the original facility
- Maintaining agricultural lands under production or cultivation

1.1 Frequently Asked Questions

What is the Voluntary Stewardship Program?

VSP is a new, non-regulatory and incentive-based approach that balances the protection of critical areas on agricultural lands while promoting agricultural viability. VSP is allowed under the GMA as an alternative to traditional approaches to critical areas protection, such as protection buffers, where uses are severely limited.

What are critical areas and where are they in Franklin County?

The five critical areas that are specifically defined under the GMA (Revised Code of Washington [RCW] 36.70A.030) and designated through the Franklin County (County) critical areas ordinance include: 1) wetlands; 2) fish and wildlife habitat conservation areas (HCAs); 3) critical aquifer recharge areas (CARAs); 4) geologically hazardous areas (GHAs); and 5) frequently flooded areas (FFAs). All five critical areas are present within the County. See Section 2 for definitions of these critical areas and Section 3 for critical area descriptions and characteristics, and where these typically intersect with agriculture lands in the County.

Wetland adjacent to agricultural uses in Franklin County

Are there critical areas on my land or how might I affect critical areas?

Critical areas are designated through the County Critical Areas Ordinance. Each critical area has specific characteristics used for identification. Additionally, critical areas maps, such as the maps included in the Franklin County VSP Work Plan (Work Plan), can be used help to identify where critical areas may occur. However, the presence of critical areas should be determined on an individual site basis.

What does participation in VSP look like and how do I get credit for current practices?

VSP participation includes tracking all changes to agricultural conservation practices that affect the protection and enhancement of critical areas and associated functions and values at a farm level through farm stewardship planning or similar efforts. There are many ways that agricultural producers can get involved and/or get credit for current practices, either through existing Conservation District or Natural Resources Conservation Service (NRCS) programs or through self-funded improvements. Contact the Franklin Conservation District (FCD) to share information on conservation practices you are implementing or plan to implement, or fill out the attached VSP checklist and send it to the FCD to evaluate your activities relative to this program. Producer participation is key part of successfully maintaining the VSP and avoiding a regulatory approach to protecting critical areas.

Participation in the VSP is voluntary, meaning that agricultural landowners and operators (commercial and noncommercial) are not required to participate. However, many producers already implement conservation practices that protect and enhance critical areas through government- or self-funded practices. Voluntary participation is the key principle in the success of this process. Agricultural producers who choose to participate are free to withdraw at any time without penalty (RCW 36.70A.760).

What is a "Self-Assessment Checklist" and how can it help producers participate in VSP?

A VSP Overview and Checklist (Attachment 1) is an implementation tool developed by the Work Group. This checklist helps facilitate the documentation of existing practices and the identification of additional conservation practices that could be implemented by producers to protect or enhance critical areas. It also provides important contact information for producers to obtain additional information on the program.

Conservation practices are implemented in a variety of ways as they are adapted to specific farm conditions. To receive credit for critical areas protection under VSP, practices do not need to meet NRCS or other government-based standards. Rather, practices need only to demonstrate a direct or indirect protection or enhancement to critical areas and associated functions and values.

What are the advantages of participating in VSP?

Agricultural producers who do not participate in VSP are not required to take actions to protect critical areas. The Work Plan can remain viable at the County level, even without full landowner participation, if the County is meeting protection and enhancement goals and benchmarks (see Section 5). However, failure to meet the goals and benchmarks for critical areas will represent failure of the Work Plan and can trigger a regulatory approach to critical areas protection under the GMA (see Section 6 for implementation timeline).

Participating in VSP can help to document conservation practices that are already in place and give the producer and the County credit for the critical areas protection or enhancement measures put in place, including direct and indirect benefits. Additionally, VSP can help introduce producers to other practices and helpful resources that might improve farming operations and potentially reduce input costs, which can improve the bottom line and also provide benefits to critical areas. There is also flexibility in agricultural operations when critical area benefits are maintained through VSP. We encourage all producers to participate.

Is there funding to support VSP?

The VSP has received statewide funding for the 2017 to 2019 biennium; however, future funding is contingent on additional appropriations by the state. Other funding sources, such as local conservation district funding, state funding programs administered by the Washington State Conservation Commission (WSCC) and other agencies, federal funding through farm bills or other programs, and private funding, can also be used to support VSP protection and enhancement goals.

What is meant by "Baseline Conditions?"

The effective date of the VSP legislation is July 22, 2011. Per the law, this is the date that identifies the baseline for protecting or enhancing critical areas and associated functions and values while maintaining agricultural viability. Per VSP legislation:

- Implementation of this Work Plan must prevent any loss of county-wide critical area functions as they existed on July 22, 2011, while maintaining agricultural viability. Goals for enhancement of critical area functions must also be identified.
- Failure to meet the goals and benchmarks for critical area functions will represent failure of the Work Plan and trigger a regulatory approach to critical areas protection under the GMA.

What does it mean to "Protect and Enhance Critical Areas?"

The VSP requires creation of measurable benchmarks that are designed to protect and enhance critical areas and associated functions and values through voluntary actions by agricultural producers while maintaining agricultural viability. Per VSP definitions:

- **Protection** requires prevention of the degradation of functions and values of baseline conditions (conditions existing as of July 22, 2011, when VSP legislation was passed).
- **Enhancement** means to improve the processes, structure, and functions of baseline conditions for ecosystems and habitats associated with critical areas (RCW 36.70A.703).

What does it mean to "Maintain and Enhance Agricultural Viability?"

To receive approval, the Work Plan must protect or enhance critical areas in a way that maintains agricultural viability (RCW 36.70A.725). For the purposes of VSP, activities or methods that protect or enhance critical areas must also be neutral to or benefit farm operations, such as reducing input costs or reducing soil erosion. Further, the VSP will not require an agricultural producer to discontinue agricultural activities that legally existed before July 22, 2011 (RCW 36.70A.702). Agricultural viability is discussed further in Section 3. It should be noted that agricultural viability can be affected by a variety of outside influences, including market conditions and weather patterns and events. These climactic factors are outside of the control of individual producers, and potential impacts on critical areas from such events may largely be outside the control of producers. While some factors may be outside the control of the agricultural community, how producers respond to an event may affect a critical area positively or negatively (e.g., grazing after a fire). Accordingly, impacts from these events on critical areas will be considered adjustments to the baseline condition, or otherwise accounted for in tracking program performance. It is also recognized that in lean years, producers may not be able to afford the costs to implement new practices on their land, and VSP goals should account for these varying conditions. Any changes to VSP Work Plan data would be coordinated with and approved by the Work Group.

As illustrated in Figure 1-1, the VSP is intended to balance critical areas protection and/or enhancement with agricultural viability at the county level through voluntary actions by agricultural producers. 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.

Nutrient management

Figure 1-1
Balanced Approach of Critical Areas Protection and Agricultural Viability

1.2 Background

In 2012, the Franklin Board of County Commissioners passed Resolution 2012-023 to "opt-into" the VSP. The Commissioners came to the following conclusions:

- Farming is vital to the economy of the County.
- The County has locally available technical resources to assist with VSP implementation.
- There is a likelihood of success with a local effort to establish, develop, and implement the VSP when adequate funding is determined and available.

Opting Into VSP
Franklin County is 1 of 27 counties that opted into VSP as an alternative to the traditional regulatory approach to protecting critical areas.

The Work Plan was developed through a series of 11 Work Group meetings, beginning on August 25, 2016 and ending November 2, 2017. Work Group members were recruited through mailed invitation to tribal affiliates, conservation agencies, and past and current participants in County conservation practices. Additionally, the FCD conducted the following outreach activities to form the Work Group: hosted an "Informational VSP kick-off" meeting on August 25, 2016; ran ads in local papers; and posted Work Group invitation announcements on the FCD website.

Work Group members were selected to provide a thorough representation of agricultural sectors, including: dairy, dryland, irrigated row-crop, cattle, tree fruit, and irrigation districts. In addition, agricultural interest groups participated including the Washington State Potato Commission and the Washington State Farm Bureau. FCD also encouraged environmental interest group participation. However, due to the limited number of environmental groups in Franklin County, FCD also allowed

Washington Department of Fish and Wildlife to participate as a voting member. The current members have served throughout the VSP Work Plan process. Tribal affiliates were contacted at the onset of the planning process, are included on the FCD VSP mailing list, and have been given the opportunity to review and comment on the Work Plan and participate throughout the process.

Throughout the Work Plan development process, meeting agendas and materials were available to the public via the FCD VSP webpage (http://www.franklincountyvsp.com/index.php) and emailed to the interested parties/contact list for all Work Group meetings. Briefings were also provided to community organizations such as the Lower Columbia Basin Audubon Society. To obtain public input on the draft Work Plan, FCD also ran a public review period from September 26, 2017 to October 27, 2017. Comments received on the Work Plan are summarized in Appendix F.

Core VSP Work Plan Approval Tests
The Work Plan has been developed to meet the following VSP statutory tests required for State approval:

- **Protect critical areas while maintaining and enhancing the viability of agriculture** at the end of 10 years after receipt of funding. RCW 36.70A.725
- **Create measurable benchmarks that are designed to protect and enhance** (through voluntary, incentive-based measures), **critical areas functions and values.** RCW 36.70A.720 (1)(e)

1.3 Work Plan Elements

The Work Plan is intended to fulfill the state requirements outlined under RCW 36.70A.720(1)(a-l), which includes twelve specific Work Plan elements that must be addressed. This Work Plan addresses these elements, including the following major components:

- Evaluate existing information and resource conditions.
- Establish protection and enhancement goals and measurable benchmarks for critical areas while maintaining agricultural viability:
  - Agricultural viability indicators could include: land in production; connection with educational institutions; agricultural census data (e.g., number of farms, new crops, and commodities); businesses supporting producers; and VSP viability.
- Establish participation goals by agricultural producers to meet measurable benchmarks.
- Provide a framework for monitoring, reporting, and adaptive management as needed.
- Facilitate landowner participation and outreach.

1.4 Work Plan Development – Roles and Responsibilities

Tillage management practices at Lenwood Farms

RCW 36.70A.705 identifies roles and responsibilities for state agencies, counties, and VSP work groups. Table 1-1 provides a summary of these roles and responsibilities, adapted to the Work Plan development process. Administrative, technical, and collaborative roles and responsibilities are included in the Work Plan development process spanning state, county, and local levels. Franklin County designated the FCD to manage and facilitate the VSP process. The Work Group, convened by the FCD, developed the Work Plan. Implementation roles and responsibilities for the Work Plan are further described in Section 6.

Table 1-1
VSP Roles and Responsibilities for Plan Development

State – Approval and Administration	
WSCC	Administers VSP statewide; approves/rejects locally developed work plans
VSP Technical Panel [1]	Provides technical guidance, reviews draft work plans, makes recommendations on whether to approve or reject the work plan
VSP Statewide Advisory Committee [2]	Works with the WSCC to revise rejected draft work plans
Local – Administration and Work Plan Development	
Franklin County	Administers VSP funding and grants for work plan development
Franklin County VSP Work Group	Develops and proposes a work plan for approval by WSCC
FCD	Manages and facilitates the VSP process, and provides technical information to support work plan development
Other Technical Providers and Special Interest Groups	Provides technical input during work plan development
Agricultural Producers – Outreach Focus	
Landowners/Operators/Others	Provide input to the draft work plan

Notes:

1. The VSP Technical Panel members include representatives from Washington State Department of Ecology, Washington Department of Fish and Wildlife, Washington State Department of Agriculture, and the WSCC.
2. The Committee includes two representatives each from environmental interests, agriculture, and counties; two tribal representatives are also invited to participate.

FCD: Franklin Conservation District
WSCC: Washington State Conservation Commission

2 Franklin County Regional Setting

2.1 Franklin County Profile

Franklin County is located in Central Washington and is bound by the Columbia River to the west, the Snake River to the south and east, and the Palouse River to the northeast. 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 large portion of Franklin, Adams, and Grant counties, the CBP also generates power, provides recreation opportunities, controls floods, and aids navigation (Reclamation 2016).

2.1.1 *Water Resources and Precipitation*

Water Resources – The County includes portions of three watersheds, which are known as Water Resource Inventory Areas (WRIAs). Most of the County is in the Esquatzel Coulee (WRIA 36). The eastern portion of the County is in the Lower Snake (WRIA 33), and a small part of the northeastern portion of the County is in the Palouse (WRIA 34).

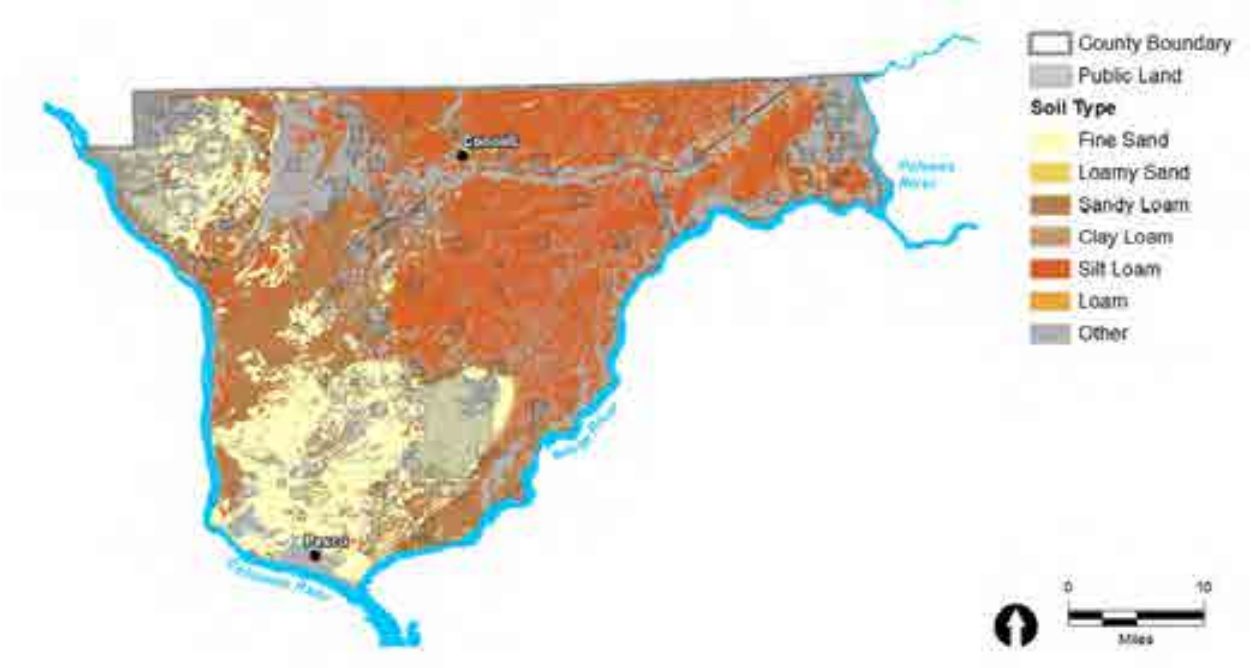
Precipitation – Precipitation ranges from 7 to 8 inches of annual precipitation in the southern portion of the County (near Pasco) to 11 to 12 inches in the northeast portion of the County (Figure 2-1).

Figure 2-1
Water Resources and Precipitation Map

2.1.2 *Soils and Terrain*

Soils and Terrain –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. Esquatzel Coulee divides the loess-mantled hills to the east from a mostly level or undulating outwash plain to the west. Soils in this region are primarily used for dryland farming to the east and irrigated farming to the west, with livestock areas located throughout the county (USDA 2006; Figure 2-2).

Figure 2-2
Soils Map



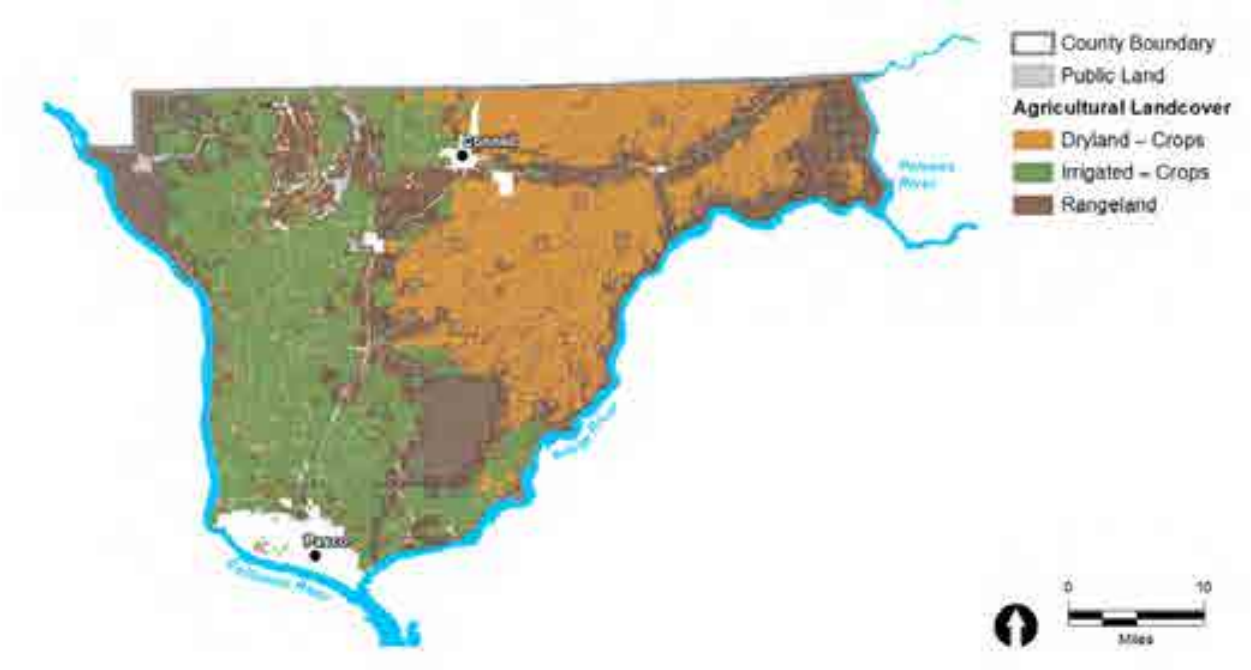
2.1.3 Land Use and Landcover

Land Use/Landcover – The County is predominantly rural and dominated by agricultural and larger land tracts outside of cities and towns (Figure 2-3). The two largest cities in the County are Pasco and Connell, where most housing, commercial, and industrial activities are centered.

Agriculture on privately owned lands comprises approximately 91% of the County's landcover, which is generally associated with three categories:

- **Dryland crops**
- **Irrigated crops**
- **Rangelands**

Figure 2-3
Agricultural Landcover Map



2.2 Agricultural Activities

Agriculture is the major land use in the County. 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 91% of the County's lands.

Franklin County has highly productive irrigated agricultural lands due to the consistent water supply from the CBP, favorable climate, and highly productive soils. Irrigated and dryland crop comprise 28% and 30% of County lands, respectively. Franklin County crop lands produce approximately 68% of the value of products sold (USDA 2012). Rangelands account for 22% of County land, and County-wide livestock sales account for approximately 32% of the value of products sold (USDA 2012). See Figure 2-3 for the agricultural landcover map.

Dryland and Irrigated Agricultural Practices
Erosion control in the County's dryland agriculture areas is an important consideration for producers. Implementing erosion control measures not only reduces soil loss in these areas, but can also improve air and water quality, improve plant health, and minimize off-site impacts from excess nutrients, pesticides and soil. Producers within the County have recently adopted conservation practices to manage erosion and retain soil moisture such as managing crop and plant residue and mulch till.

For irrigated agricultural practices, the conversion from rill irrigation to sprinkler irrigation has brought about significant reduction in irrigation-induced erosion. Irrigation management systems have improved to the point of eliminating much of the irrigation-related erosion that has been a historical concern on irrigated agricultural lands in the County. See Section 4 for protection and enhancement strategies.

On a statewide level, per the U.S. Department of Agriculture's (USDA) Census of Agriculture (2012), Franklin County:

- Has a market value from agricultural products of approximately $740 million.
- Has the second highest acreages of forage land used for all hay and haylage, grass silage, and greenchop in Washington.
- Is the third highest producer of hay crops (sales value) in Washington.
- Is the third highest producer (sales value) for poultry and eggs in Washington.
- Is the third highest producer of vegetables (sales value) in Washington.
- Is the fourth highest producer of agricultural products (overall market value) in Washington.

See Table 2-1 for summary of agricultural landcover and major agricultural products within the County.

Table 2-1
Agricultural Activity and Products (Private Lands)

Agricultural Type	% of County	Primary Crops/Livestock
Irrigated	28%	• Vegetables • Tree fruit (e.g., apples and cherries) • Vineyards • Dairy • Potatoes • Wheat • Legumes • Corn • Hay • Seed Crops
Dryland	30%	• Wheat
Rangeland	23%	• Cattle • Horses
Total	**81%**	

Sources:
WSDA Agricultural Landcover Data (2011)
USDA 2012

The 883 farms in the County vary in size ranging from relatively small, with agricultural product sales of less than $10,000, to large, with agricultural product sales of greater than $500,000 (Table 2-2).

Table 2-2
Size of Farms in Franklin County Based on Agricultural Product Sales

Farm Agricultural Product Sales (Dollars)	% of Farms
Less than 10,000	39%
10,000 to 100,000	14%
100,000 to 250,000	8%
250,000 to 500,000	9%
Greater than 500,000	30%

2.3 Critical Areas

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) HCAs; 3) CARAs; 4) GHAs; and 5) FFAs.

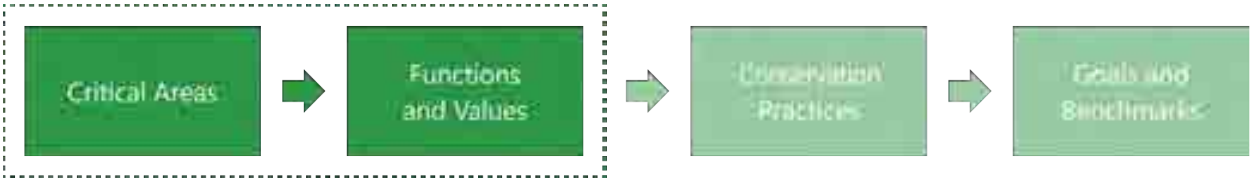
Critical Areas per RCW 36.70A.020(5) Include:

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 (Ecology 2010).
Fish and Wildlife Habitat Conservation Areas (HCAs) 	HCAs are lands and waters that provide habitat to support fish and wildlife species throughout their life stages.
Critical Aquifer Recharge Areas (CARAs) 	CARAs 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.
Geologically Hazardous Areas (GHAs) 	GHAs are areas susceptible to erosion, landslides, and other geological events. In Franklin County, designated GHAs related to agricultural activities are primarily associated with erosion hazard areas, which include high to very-high water erosion hazard.
Frequently Flooded Areas (FFAs) 	FFAs Includes 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.

2.4 Critical Area Functions and Values

VSP legislation requires that work plans develop goals and benchmarks to protect and enhance critical area **functions and values** (RCW 36.70A.720(1)(e)). The key functions and values provided by the five critical areas in the County can be summarized into the following four major functions: 1) water quality; 2) hydrology; 3) soil; and 4) habitat. The goals and benchmarks developed for this Work Plan, included in Section 5, are based on protection and enhancement for these four key functions (see Figure 2-4).

Figure 2-4
VSP Crosswalk – Critical Areas Connection with Functions and Values



Each critical area provides one or more of these key functions and values, which are summarized in Table 2-3. The relationship between each critical area and its key functions and values is discussed further in the following sections. See Section 3.1 for further discussion on the baseline conditions of critical areas within the County's agricultural lands. See Section 4 for key conservation practices that provide functional benefits to these key functions.

Table 2-3
Critical Area Functions

Critical Areas	Key Functions			
	Water Quality	Hydrology	Soil Health	Habitat
Wetlands	●	●		●
Fish and Wildlife Habitat Conservation Areas	●	●	●	●
Critical Aquifer Recharge Areas	●	●		
Geologically Hazardous Areas (Erosion)	●	●	●	●
Frequently Flooded Areas	●	●	●	●

2.4.1 Water Quality

Water quality refers to the capacity of the landscape to filter and retain excess fine sediments, nutrients (such as phosphorus and nitrogen), and other pollutants, such as heavy metals and nitrates, before they enter surface or groundwater. This function provides clean water for fish and other aquatic species, terrestrial species (including humans), as well as clean water for agricultural

practices, including irrigation and stock watering, and improves groundwater quality. Water quality functions also help moderate water temperatures by providing vegetative shade and cooler water from subsurface flow, which helps maintain cooler in-water temperatures and dissolved oxygen levels needed to support aquatic species.

Agriculture can affect surface and groundwater water quality through excess nutrients from fertilizers and pesticides, bacteria from livestock (e.g., fecal coliform), toxins from chemical inputs, and sediment from soil erosion. Water quality can also be impacted from non-agricultural activities such as runoff from paved or turf areas, or from leaking septic systems. In Franklin County, the prevalence of fertilizer use has resulted in elevated nitrate concentrations in some surface and groundwater systems (Lindsey 2017). To address this issue, Franklin County is part of the Columbia Basin Ground Water Management Area (GWMA), a voluntary organization tasked with addressing water quality issues and protecting local groundwater systems. The GWMA is composed of multi-county (Adams, Franklin, Grant) organizations working together to implement groundwater management strategies outlined in the GWMA Plan (GWMA 2001). The GWMA Plan (2001) includes goals, objectives, and measures of success for groundwater resource protection, similar to VSP. Conservation practices can help to decrease nutrient and sediment inputs in surface water and groundwater and can also enhance the land's ability to filter and retain nutrients and sediments, and protect riparian and wetland habitat. The conservation practices included in this Work Plan are consistent with the management strategies outlined in the GWMA Plan as described in Section 5.

2.4.2 Hydrology

Hydrology is the process of water delivery, movement, and storage. In an ecosystem, hydrology is affected by landform, geology, soil characteristics and moisture content, and climate (including precipitation). Water is delivered to streams primarily from surface and shallow subsurface runoff and, in some cases, from groundwater. Stream channels, riparian areas, and wetlands are also a part of the aquatic ecosystem that stores and transports water and sediment, maintains base flows, and can support vegetation and micro-organism communities. Additionally, the CBP supplies irrigation water throughout the County. Outside of the large rivers bordering the County (Columbia, Snake and Palouse rivers), surface water flow for all other water bodies is primarily influenced by the CBP, South Columbia Basin Irrigation Districts and individual irrigator operations. The northwest corner of the County contains a large wetland complex that provides important hydrology functions and should be considered for future protection and/or enhancement efforts.

Agricultural practices can affect the amount of moisture retained within soils and the amount of storage during rain events. Farming practices can also protect the land from loss of soil due to erosion. Water retention is equally important for maximizing dryland crop yields. Certain agricultural practices can increase the storage of water, reduce the speed of water delivery, and help control water movement.

Esquatzel Coulee/Wasteway and the Columbia Basin Project
Changes to the landscape expanded when irrigation became widespread after the construction of the Grand Coulee Dam and establishment of the Columbia Basin Project (CBP) in the mid-1900s, including the development of Esquatzel Coulee in the 1950s (Drost et al. 1997). Esquatzel Coulee is operated by the South Columbia Basin Irrigation District (SCBID) and serves as a drainage, wasteway, and water conveyance route for the CBP irrigation water supply, which serves the irrigation needs of the County. The delivery of irrigation water from the CBP changed the appearance and ecology of Franklin County from mostly semi-arid shrub-steppe to a system of reservoirs, canals, wasteways, and irrigated farmland. A significant portion of this project water now returns to Esquatzel Wasteway and is then conveyed back to the Columbia River through topographic lows, and earthen and concrete channels. The CBP water has created wetlands and riparian habitat in certain areas of the County that support fish and wildlife. Note that the Esquatzel Coulee/Wasteway does not constitute a significant critical area. Also, agricultural activities intersect, as only a small portion of the land along the Esquatzel is privately owned.

Esquatzel Wasteway at the Columbia River

2.4.3 Soil Health

Soil provides an underground living ecosystem, which is essential for preserving plants, animals, and human life. Soil health is essential in the County to provide the following characteristics:

- Reduce susceptibility to erosion
- Hold and slowly release water (see hydrology function section for more detail)

- Filter pollutants and, in many cases, detoxify them
- Store, transform, and cycle nutrients
- Physically support plants

Intensive tillage can lead to loss of soil organic matter, pesticides can impact beneficial soil organisms, and high concentrations of fertilizers inhibit nitrogen fixation and stimulate nitrification (increasing toxins in the environment). However, agriculture protects lands from conversion to more intensive development, and farmers can be the County's most effective soil managers by limiting tillage and pesticide and fertilizer applications to the lowest effective level while still achieving the desired agricultural production results. Changes to agricultural practices can increase the overall soil health of the County through reducing susceptibility to erosion and increasing the capacity of soil to hold and cycle nutrients and water.

Habitats and Species in Franklin County
In the County, habitats include shrub-steppe habitat, wetlands, rivers, and streams. Common fish and wildlife species in Franklin County include:

- Chinook salmon
- Sockeye salmon
- Coho salmon
- Steelhead
- Trout
- Bald eagles
- Hawks
- Pheasants and quail
- Waterfowl and shorebirds
- Mule Deer
- Burrowing owl

*Note: Other uncommon species also occur that are important for protection.

No till corn into wheat stubble

2.4.4 Fish and Wildlife Habitat

Habitats provide the natural environment in which a particular species or population can live and also support life stages such as breeding and rearing. Habitat, such as rivers in Franklin County,

provide a key aquatic and habitat functions such as being a source of organic materials, habitat structures and cover, bank stabilization, and shade. Riparian habitat has also emerged along CBP facilities, including drains and wasteways that follow topographic lows. Many terrestrial species require large areas of range for migration, forage, and cover. The habitat requirements are unique for different species and can also vary for different life stages of a species. Habitat loss is the primary threat to the survival of native species; therefore, it is important to look at opportunities for protecting and/or enhancing habitat and habitat connectivity throughout the county.

Agriculture practices impacted historical habitats with a more intensely managed landscape, and although agriculture lands can provide vast tracts of semi-natural habitat, species biodiversity is typically higher in the remnant natural areas in the County (Weibull et al. 2003). It has been shown that farmers who provide greater landscape variability on their land and high perimeter-to-area habitats, meaning the area and shape of habitat area, can provide meaningful benefit to many different species (Weibull et al. 2003).

Shrub-steppe is the dominant natural habitat type within the County. This, in combination with agricultural lands, provides wildlife habitat. Farming practices can provide a variety of habitat functions, including providing food, water, cover, and nesting habitats. Wetlands and other streams in the County provide habitat features for fish and other species to use. Conservation practices can protect and/or enhance terrestrial and aquatic habitat functions for species in Franklin County.

Lenwood Farms pollinator habitat planting

Historical Conditions and Shrub-steppe Habitat

It is not the intent of VSP to restore natural resources to pre-development conditions, but to protect critical area functions and values that existed in 2011. Prior to cultivation, most of the County was covered with shrub-steppe habitat. The typical vegetation in these communities consisted of open sagebrush and shrub plains with an understory of perennial grasses. These areas are important habitat for species such as Washington ground squirrel, burrowing owl, and other bird species. Conversion to cropland, overgrazing, and invasion by exotic species have resulted in the loss and fragmentation of these habitats. Today, less than half of the historical shrub-steppe habitat in Washington remains (WDFW 2017). In Franklin County, the remaining shrub-steppe habitat covers less than 8% of the County, as defined by Priority Habitat and Species mapping, approximately half of which (approximately 3.5%) occurs in agricultural lands. VSP activities are focused on protecting shrub-steppe and other habitats existing in the County as of 2011.

3 Baseline and Existing Conditions

The effective date of the VSP legislation is July 22, 2011. This is also the date chosen by the legislature as the applicable baseline for accomplishing the following items (RCW 36.70A.703):

- Protecting critical areas and associated functions and values
- Providing voluntary, incentive-based enhancements to critical areas functions and values
- Maintaining and enhancing the viability of agriculture in the County

In order to successfully meet these criteria, the County must protect critical areas as they existed on July 22, 2011. This Section establishes critical areas as they existed in the County as of 2011. Any improvement of critical areas through conservation practices will be considered enhancement under VSP. Conservation practices that have been implemented since 2011 are discussed in Section 4. Both protection of baseline conditions, as described in this section, and improvements of critical areas, as described in Section 4, dictate the setting of goals and benchmarks, described in Section 5.

It's important to note that changes to baseline conditions outside of VSP are likely to occur due to effects from climate change, natural events (e.g., wild fires), changes in hydrology from the CBP, or other changes outside of the scope of VSP. These changes would be documented through the reporting and adaptive management process in coordination with the Work Group, as discussed in Sections 5 and 6.

Use of Maps
The data sources and maps that were used to assess the potential presence of critical areas within the County and intersection with agricultural lands were used for planning-level purposes only. Actual critical areas presence is determined on a case-by-case basis through farm stewardship planning. Appendix A includes a Map Folio.

3.1 Establishing Baseline Conditions

The baseline conditions assessment prepared for this Work Plan includes an inventory of agriculture and critical area resources. See Appendix B for the complete inventory and methodologies. The

following data were used in the inventory to assess the conditions as close to the 2011 baseline as available data allowed:

- **Agricultural landcover assessment** was based primarily on Washington State Department of Agriculture (WSDA) 2011 agricultural landcover data. U.S. Department of Agriculture (USDA) agricultural landcover data (2011) also provided rangeland data. Three major agricultural land categories were characterized within the County: 1) irrigated; 2) dryland; and 3) rangeland. These categories are associated with different crops and agricultural activities as they apply to these lands and their intersection with critical areas.
- **Critical areas assessment** was based on designations included in the County's Critical Areas Ordinance per Franklin County Code Chapter 18.08 – Critical Area/Resource Protection Standards. Data sources for planning-level critical areas mapping ranged from 2000 to 2016 and included data from the County's recent Shoreline Master Program update (Anchor QEA 2016). See Appendix B for a complete list of data sources.
- **Privately-owned and managed lands** were used when assessing critical area intersections with agricultural lands. Public land is subject to agency policies and protective measures and is not included in VSP. Similarly, where infrastructure is located within public right-of-way (e.g., CBP/Irrigation District properties), conveyance for operation of the project is not defined as agricultural land or activity under the Shoreline Management Act and is considered outside of VSP jurisdiction.

3.2 Baseline (2011) Intersection of Critical Areas and Agricultural Land Uses

This section provides a baseline conditions summary of the intersections of critical areas on agricultural lands. The following appendices provide additional information and methods used for the baseline conditions summary:

- Appendix A: VSP Map Folio
- Appendix B: Baseline Conditions Summary Method and Data Sources (includes methods, data sources, and critical areas data summary tables)

The overlap between agricultural land use and critical areas generally accounts for only a small percentage of the total agricultural land in the County. However, critical areas can provide benefits in the form of functions and values (water quality, hydrology, soil health, and fish and wildlife habitat) beyond their physical locations. For example, wetlands provide water filtration services that improve water quality by controling the movement of sediment and nutrients before it seeps into groundwater or flows to nearby surface waters. For fish and wildlife habitat, these areas promote habitat connectivity for other terrestrial species and provide habitat for beneficial pollinators and birds. For GHAs, erosion control measures greatly reduce the mobility of soils, protecting air and water quality in other areas. County-wide, the portion of agricultural lands that physically intersect

with critical areas is small (Table 3-1). However, practices that have the potential to affect critical areas and associated functions and values are more widespread and are targeted in the goals and benchmarks.

Although protection of physical critical areas is important, protection of critical area functions and values means even producers without a defined critical area on their property can participate in VSP to help the County reach its goals. Both critical areas locations within the County and their connection to critical area functions and values are described in this Section.

Table 3-1
Intersect Between Critical Areas and Agricultural Activities Within Franklin County

Critical Area Type	Acres Within Agricultural Lands[1]	% of Total Agricultural Lands[1]
Wetlands (all types)	1,993	<1%
Fish and Wildlife Habitat Conservation Areas[2] *(Also includes about 39 miles of known streams)[3]*	63,951	10%
Critical Aquifer Recharge Area	84,994[4]	13%
Geologically Hazardous Areas (Water Erosion Areas)[5]	206,710	33%
Frequently Flooded Areas	9,524	1%

Notes:

1. Agricultural areas included in this summary are limited to privately owned lands. Publicly owned land is not managed under VSP as noted above.
2. Recreational and gaming species habitat, such as mule deer and ring-necked pheasant, are not included in these numbers, except, where they overlap with other PHS.
3. Note that there are 1,635 miles of unknown streams documented in Franklin County. Unknown streams are not included in this data because many of these are likely related to topographical low spots that only hold water during flood periods. Intermittent streams or wetlands that meet the definition in the Washington State Hydraulic Code in Washington Administrative Code 220-660 are the producer's responsibility to protect or enhance as part of implementation.
4. Of the mapped CARAs 1% are associated with wellhead protection areas and 99% are associated with Irrigated Group A soils.
5. Of the mapped water erosion GHAs, 4% are associated with Ringold Erosive Soils and 96% are associated with Severe to Very Severe Water Erosion Potential.

3.2.1 Wetlands

Wetlands are found within 0.4% of the County's total agricultural lands (Figure 3-1), which represents approximately 35% of the wetlands found within the County. Most wetlands are located in rangelands in the western half of the county (Table 3-2); however, these lakes are dependent on irrigation (Anchor QEA 2014). Wetlands found on or near irrigated areas influenced by irrigation practices and are subject to ongoing water management practices, including water efficiency and conservation practices for the delivery and use of water for irrigation. This management affects the volume and timing of surface water available to support some wetlands.

Irrigation-influenced Wetlands
Development of the CBP has directly and indirectly caused the formation of many of the wetlands within the County through water management actions and associated facilities. Many wetlands are considered unintentional wetlands, resulting from localized conditions such as seepage from irrigation ditches. These types of wetlands are considered jurisdictional wetlands regulated by state wetland law. Improving water management practices (such as implementation of water conservation practices), which is happening through projects and practices implemented in Franklin County each year, affects the size and number of wetlands and associated habitats within the County. However, if the irrigation practices are changed (such as implementation of water conservation practices), and the wetland dries up and no longer performs wetland functions, then no mitigation is required (Ecology 2010). When irrigation efficiencies result in wetlands drying up, voluntary enhancement measures could be implemented to help maintain habitat features, although these voluntary enhancements would not be necessary to meet the wetland protection standard.

Table 3-2
Distribution of Wetlands in Each Agricultural Type

Dryland	23%
Irrigated	12%
Rangeland	65%

Wetlands on Agricultural Lands	
General locations/ distribution	• Mostly located in the northwest corner of the County associated with rangeland areas near irrigated fields • Few in the northeast corner
Characteristics	• Most are either freshwater emergent seasonal wetlands or lake/pond wetlands

Figure 3-1
Wetlands and Streams Map

Key Functions	Wetland Functions
Water Quality	• Reduces siltation and erosion • Provides water filtration • Moderates water temperature
Hydrology	• Stores water to reduce flooding and contributes to base flows
Habitat	• Provides aquatic and woody vegetated habitat for fish and wildlife

3.2.2 Fish and Wildlife Habitat Conservation Areas

Streams and Riparian Vegetation

A small number (less than 2%) of the total stream miles mapped within the County are within agricultural lands (Figure 3-2 and Appendix A, Figure 4). This number does not include streams documented within the County that are classified as unknown by the Washington Department of Natural Resources. In all or nearly all cases these unknown streams represent topographic lows without stream characteristics. This means that there are an additional 1,635 of unknown stream miles documented within agricultural areas that may or may not have characteristics of an HCA (Table 3-3).

Streams and Riparian Areas on Agricultural Lands[1]	
General locations/ distribution	**Streams:** See Section 2 for discussion of water resources within the County. Overall, a majority of the streams are found in dryland and rangeland areas (Table 3-4). **Riparian vegetation:** Located along water resources and mostly within a 20-foot "ribbon of green" from ordinary high water.
Characteristics	**Streams:** • The County supports many fish species, including priority and Endangered Species act (ESA)-listed species. The ESA-listed species are found in the Columbia and Snake Rivers and include bull trout, steelhead, and Chinook and sockeye salmon. Other species includes lamprey, sucker, rainbow/redband trout, sturgeon, and westslope cutthroat trout (Anchor QEA 2014). • Fall Chinook salmon are known to spawn within the Franklin County reach of the Columbia River, and other anadromous species rely on the river as a migration corridor. **Riparian Vegetation:** • Primarily herbaceous shrublands comprising sedge and rush species. • The Esquatzel Coulee provides a narrow strip of riparian vegetation through the center of the County. Some areas along the coulee may be dominated by non-native Russian olive (which also provides habitat opportunities); however, shrub-steppe habitat is also found in this area (Anchor QEA 2014).

Note:
1. Although irrigation canals, laterals, and ditches created as a part of the CBP provide fish and wildlife habitat, they are not considered HCAs (RCW 36.70A.030(5)).

Riparian Vegetation
Riparian vegetation includes the vegetated areas along water sources (wetlands and topographic lows that convey CBP waters) characterized by plants accustomed to soils with higher water content than adjacent areas. In Franklin County, riparian vegetation typically consists of grasses, shrublands, and some trees. Riparian vegetation provides habitat for fish and wildlife, reduces siltation by trapping sediments, and helps moderate in-water temperatures by providing vegetative shade.

Table 3-3
Critical Area Streams Within Franklin County Agricultural Lands

Stream Type	Stream Miles Within Agricultural Lands[1]	% of Total Stream Miles within Agricultural Lands
Streams Total	**36**	**2.1%**
Shorelines of the State	5	<1%
Potential Fish Use	6	<1%
No Fish Use	25	2%

Note:
1. Note that there are 1,635 miles of unknown streams documented in Franklin County. Unknown streams are not included in this data because many of these are likely related to topographical low spots that only hold water during flood periods.

Table 3-4
Distribution of Streams and Riparian Vegetation in Each Agricultural Type

	Streams	Riparian Vegetation
Dryland	12%	5%
Irrigated	8%	<1%
Rangeland	80%	95%

Priority Habitats and Species

Priority Habitats and Species (PHS) 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 are removed (Figure 3-2). Note that game species, including mule deer and ring-necked pheasant, are found within 20% of agricultural lands. See Appendix B for a comprehensive list of PHS Washington Department of Fish and Wildlife (WDFW) has identified in the County. Table 3-5 shows the distribution of PHS species within agricultural lands.

Priority Habitats and Species on Agricultural Lands	
General locations/ distribution	• Consists of mostly bird habitat in the Juniper Forest/Juniper Dunes Wilderness Area, around small lakes in the northwest, and along the Snake and Columbia rivers • Ferruginous hawk, a State threatened species, has a large amount of habitat in and near the Juniper Forest Wildlife Habitat Management Area in the southern portion of the County
Characteristics	• Incudes ponds, riparian habitats, and upland habitats, including large amounts of shrub-steppe habitat in the Juniper Forest/Juniper Dunes Wilderness Area • The most prevalent HCA is mule deer habitat, including approximately 125,000 acres of habitat within agricultural lands

Table 3-5
Distribution of PHS in Each Agricultural Type (not Including Game Species and Habitat)

Dryland	8%
Irrigated	20%
Rangeland	72%

Game Species in Priority Habitat and Species (PHS) Maps
PHS maps maintained by WDFW provide a reference to the potential existence of HCAs. Game species (e.g., mule deer and pheasant) habitat mapped in PHS overlaps a greater amount of agricultural land in Franklin County than non-game species habitat. Protecting riparian and shrub-steppe habitats is expected to benefit all species that use HCAs, including game species.

Figure 3-2
Priority Habitat and Species Map

HCA: HCAs include streams, riparian vegetation, and upland habitats, such as shrub-steppe, that provide water quality, hydrology, soil health, and habitat functions. HCAs provide migratory corridors and refugia for wildlife species. Streams provide a key habitat and streamside vegetation functions as a source of organic materials, habitat structures and cover, streambank stabilization, and shade to help regulate water temperatures. Other species require large areas of range for migration, forage, and cover. Habitats of local importance may support sensitive species throughout their lifecycle, or are areas that are of limited availability or high vulnerability to alteration. HCAs (riparian areas and wetlands) help to improve water quality, affect hydrology, contribute to soil health, and provide a variety of habitats.

Key Functions	HCA Functions
Water Quality	• Reduces siltation by stabilization streambanks from riparian vegetation • Provides water filtration • Moderates water temperature by providing shade
Hydrology	• Stores and retains water to reduce flooding and support base flows in streams
Soil Health	• Reduces rate of erosion by providing vegetative cover
Habitat	• Native shrub-steppe habitat supports sensitive species and provides refuge, nesting and rearing areas for wildlife and plants • Riparian habitat provides aquatic habitat by supplying organic inputs (e.g., leaf fall, insects, and large wood) and provides refuge, nesting, and rearing areas for wildlife • Supports sensitive species lifecycles

3.2.3 Critical Aquifer Recharge Areas

CARAs provide protections to public drinking water supplies and affect groundwater quality and hydrology through groundwater infiltration. There are 65 public water supply wells in the County and their associated wellhead protection areas are found in approximately 13% of the County's total agricultural lands (Figure 3-3). Table 3-6 shows the distribution of CARAs in agricultural lands. Of the total public water supply wells in the County, 42 are shallow wells, 18 are deep wells, and the remaining 5 are either open to multiple aquifers or unknown (Lindsey 2017). Shallow wells typically have water tables close to the ground surface and have the greatest potential risk from surface contamination. Accordingly, conservation practices that can protect water quality and recharge aquifers are desirable.

Critical Aquifer Recharge Areas on Agricultural Lands	
General locations/ distribution	• Most wellhead protection areas are near irrigated lands close to municipal water supplies; these are concentrated around cities and towns • Irrigated group "A" soils are located in irrigated lands mostly in the southwest and northwest corners of the County
Risks associated with agriculture	• Located in areas where potential contaminants on the land surface, such as fuel, pesticide or fertilizer, could potentially infiltrate into public drinking water supplies

Table 3-6
Distribution of CARAs in Each Agricultural Type

	Wellhead Protection Areas	**Irrigated Group "A" Soils**
Dryland	19%	2%
Irrigated	15%	97%
Rangeland	66%	1%

Figure 3-3
Critical Aquifer Recharge Areas Map

CARA: CARAs provide protections to public drinking water supplies. CARAs affect groundwater quality and hydrology through groundwater infiltration.

Key Functions	CARA Functions
Water Quality	• Infiltration through soil column and underlying geology improves groundwater quality
Hydrology	• Recharges groundwater resources

3.2.4 Frequently Flooded Areas

FFAs are found within only 2% of the County's total agricultural lands (Figure 3-4). Table 3-7 shows the distribution of FFAs in agricultural lands. FFAs typically overlap or are adjacent to wetlands and some HCAs. The Federal Emergency Management Agency (FEMA) occasionally works with the County to update floodplain mapping. No updates to the mapping are currently underway; any changes to the FEMA maps in the future would be reflected in this Work Plan through the adaptive management process.

Frequently Flooded Areas on Agricultural Lands	
General locations/ distribution	• FFAs occur along waterways and drainages mainly on Esquatzel Coulee and unknown streams in the eastern portion of the County
Characteristics	• Flooding throughout the County is mainly experienced in the vicinity of Esquatzel Coulee and a stream near Kahlotus when oversaturated or frozen ground conditions occur with an increase in rainfall and rapid snowmelt runoff during the winter and spring months (Franklin County 2011)

Table 3-7
Distribution of FFAs in Each Agricultural Type

Dryland	34%
Irrigated	12%
Rangeland	54%

Figure 3-4
Frequently Flooded Areas Map

FFAs: FFAs 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. FFAs can affect surface and groundwater quality and hydrology

(timing and magnitude of flows, and alluvial aquifer recharge), improve or degrade soil health based on vegetative conditions, and contribute to riparian habitat diversity.

Snake River Corridor

Key Functions	FFA Functions
Water Quality	• Vegetation in FFAs holds underlying soil in place and also provides area for new sediment depositions to settle out • Moderates water temperature by shallow groundwater infiltration and releases from unconfined aquifers of cooler groundwater back to streams, and by vegetation that can provide shade
Hydrology	• Stores and retains surface water in floodplain, reducing velocities and modifying discharge rates • Recharges groundwater that can later be returned to the stream to help maintain base flow
Soil Health	• Supports moisture content in soils, reduces rate of erosion, and supports plant growth that can increase organic inputs to soil
Habitat	• Provides aquatic and riparian habitats for wildlife, plants, and fish

3.2.5 Geologically Hazardous Areas (Erosion)

In Franklin County, the only designated critical areas specific to erosion are areas that have specific characteristics and are called Ringold Erosive Slopes. These areas have been mapped by the County and are not widespread, occurring on approximately 4% of the County's privately-owned agricultural lands (shown on Figure 3-5). Table 3-8 shows the distribution of GHAs in agricultural lands.

Severe to very severe water erosion potential areas are found within 33% of the County's total agricultural lands (Figure 3-5). Wind erosion potential areas also occur within the County's agricultural lands, but are not officially designated as erosion hazard areas within the County's critical

areas code. Erosion minimization measures promote soil health and conservation, which is a key contributor to agricultural viability in the County.

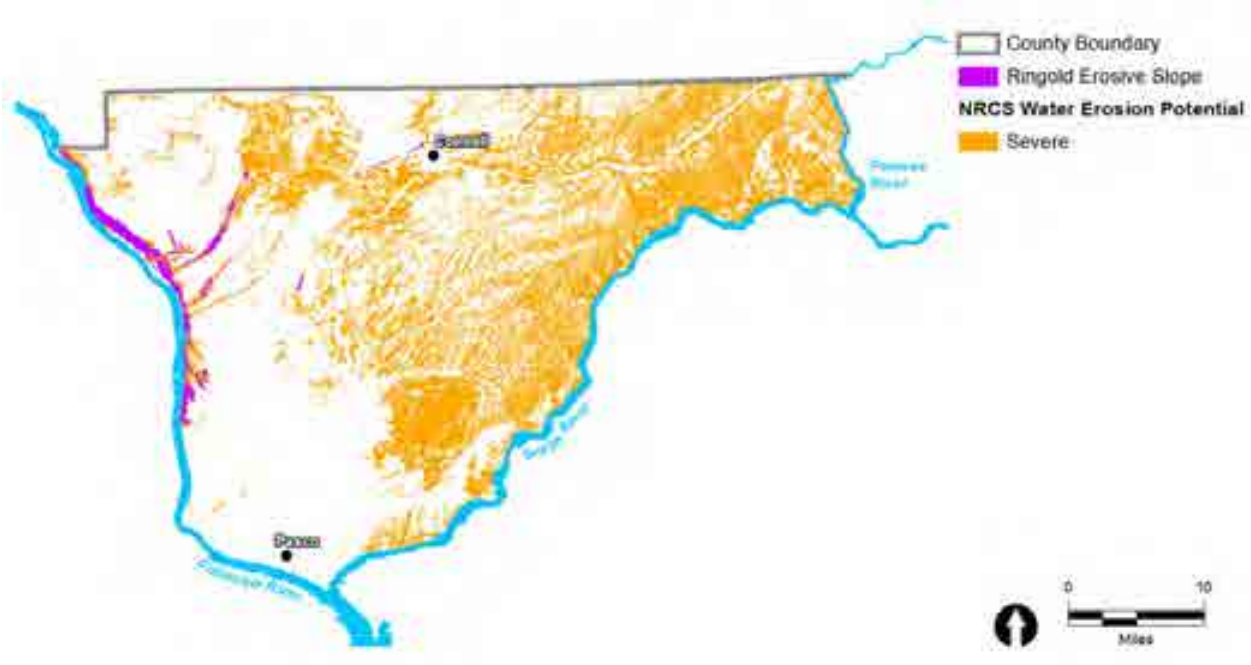
Erosion Hazard Areas on Agricultural Lands	
General locations/ distribution	• Ringold Erosive Slopes are found mainly on the western edge of the County on ridges along the Columbia River and irrigation drainages. • Severe to very severe water erosion potential areas are distributed throughout the eastern portion of the County in the predominately dryland and rangeland areas.
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.

Table 3-8
Distribution of GHAs in Each Agricultural Type

	Ringold Erosive Soils	Water Erosion Potential
Dryland	18%	44%
Irrigated	43%	6%
Rangeland	39%	50%

Geologically Hazardous Areas for Seismic and Landslide Hazards
Geologically hazardous 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 this Work Plan, structures in agricultural lands will continue to be permitted and regulated through the County's critical areas code.

Figure 3-5
Water Erosion Potential Map



GHAs: In the VSP context, GHAs can primarily impact soil erosion risks. For GHAs, the focus is on reducing the rate of erosion and to reduce the risk of erosion effects on other functions such as surface water quality, water infiltration into soil to improve groundwater conditions, and to soil health. As described above, minimizing erosion helps to maintain agricultural viability by promoting soil conservation and improving soil and water quality. In the developed areas (outside of VSP), GHAs can affect development activities where soils may not be suitable due to landslide, earthquake, or other geologic risks.

Key Functions	GHA Functions
Water Quality	• Rate of soil erosion and associated movement of sediment deposited in surface waterbodies
Hydrology	• Rate of groundwater infiltration and rate of surface water runoff
Soil Health	• Rate of erosion as it relates to depth
Habitat	• Rate of erosion as it relates to sediment inputs to stream and wetland aquatic habitat

3.3 Agricultural Viability Baseline Conditions

Agriculture is widely recognized as a pillar of Washington State's and Franklin County's economies. The VSP law is explicit that critical areas are to be protected and enhanced while, "maintaining and improving the long-term viability of agriculture" (RCW 36.70A.700). Both objectives, critical areas protection and enhancement and maintaining agricultural viability, have to be met in this Work Plan.

Agricultural viability in the County includes regional and individual farm elements. These are defined, respectively, as the region's ability to sustain agricultural production over time and an individual farm's ability to meet financial obligations and make a profit. Tables 3-9 and 3-10 identify agricultural viability concepts for the regional and individual farm perspectives within the County.

At the regional level, agricultural viability is the support system that helps individual farms to succeed. This system also helps to mitigate potential threats and supports local producers in their operations and ability to take advantage of business opportunities.

Table 3-9
Agricultural Viability – Regional Elements

Regional Elements	
Concept	**Detail**
Stable and secure agricultural land base	Land conversion to agricultural or conservation uses
	Stable water rights
Infrastructure and services	Utilities/irrigation
	Market access/transportation
Support for best farm management practices	Economically viable solutions
	Balanced approach
Education, training, and succession planning	Apprenticeships/training
	Interconnectivity with end users
Welcoming business environment	Stable regulatory environment
	Partnership-based environmental protection
Market trends/viability	Changing livestock and commodity prices can affect the number of producers that support economy
	Value added measures to make products more marketable

Low-energy precise application irrigation system

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 pressures (Table 3-10). In the County, one of the main farm-level agricultural viability concerns is land productivity. Land production capacity can be impacted by soil erosion and soil quality (moisture and nutrient management). Maintaining and enhancing land production capacity can be addressed through conservation and land-management practices. Many conservation practices also have the dual benefit of protecting and enhancing critical areas while enhancing land production capacity. Additionally, reduction of input costs (e.g., fuel and fertilizer) can also result from these practices, and technology improvements can also help enhance production capacity.

Another important aspect of agricultural viability is the importance of operating and maintaining existing conservation practices/systems to achieve long-term benefits and minimize the discontinuation of conservation practices. The continuance of conservation practices and systems is a key component of VSP implementation. Maintenance of the land base in agricultural production is another agricultural viability component. Agricultural lands coming out of production due to market conditions or other factors can affect the services that support agriculture and make it less viable if the land base and associated productions and uses are declining.

Table 3-10
Agricultural Viability – Farm Elements

Farm Elements	
Concept	**Detail**
Reduce input costs	Energy (power, fuels)
	Chemicals
	Labor
Maintain/enhance land production capacity	Soil health
	Water systems and moisture management
	Nutrient management
	New technologies
Flexibility to respond to market conditions	Changing land in production
	Individual schedule for implementing farming practices
	Cropping choices
Incentives	Payment for measures
	Tax breaks
Managed farmland conversion	Urban development
	Maintaining resource lands
Regulatory environment predictability and support	CWA, CAA, ESA, and others
	County permitting
Protect private property rights	Recognizing and respecting rights
Environmental variation	Rainfall, temperature, and other environmental factors can affect agricultural production and activities

Notes:
CAA = Clean Air Act
CWA = Clean Water Act
ESA = Endangered Species Act

Franklin County is unique in location, growing climate, and agricultural diversity enabled through irrigation supply from the CBP. These are all important factors in considering agricultural viability. To obtain a firsthand agricultural viability perspective, several producers in the County were interviewed. Figure 3-6 includes a summary of agricultural viability strengths, weaknesses, opportunities, and threats based on responses obtained from these interviews (Bailie 2017; Cochrane 2017; Wieseler 2017). See Appendix B-4 for a summary of these interviews.

Figure 3-6
Agricultural Viability Strengths, Weaknesses, Opportunities, and Threats

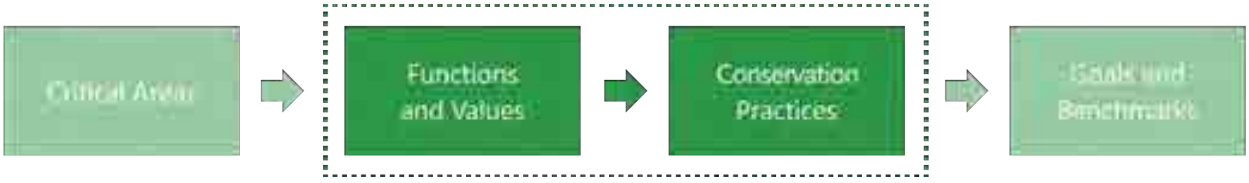
Strengths	Weaknesses
• Reliable water sources • Reliable climate • Agricultural processing facilities close to producers • Transportation access (air, rail, county roads and highways, water) • Abundant, cheap electricity • Diverse agricultural support industry	• Reliance on export of products • Incentives for younger generations to farm • Distance from large market centers • Low variety of dryland products • Dryland dependence on weather
Opportunities	**Threats**
• Overseas market expansion • Regional population growth • Emerging markets population growth • Financial and technical assistance for young farmers • Drought-resistant wheat strains • Expansion of the CBP	• Foreign trade restrictions • Low commodity prices • Loss of small-size producers • High capital producers coming from California • Taxes and regulations on farm supplies • Groundwater shortage • Climate change • Urban sprawl • Loss of pollinators

Overall, the Work Plan has been designed to support and promote the regional and individual farm agricultural viability elements listed above. The program places emphasis on systems, practices, flexibility, incentives, and other opportunities mutually beneficial to agricultural viability and critical areas protections, supporting continued agricultural viability in the County. Agricultural viability is a component of conservation activities described in Section 4 and in each of the goals provided in Section 5. Maintaining agricultural viability will continue to be a key component of implementation of the Work Plan.

4 Protection and Enhancement Strategies

Agricultural producers play a major role in the stewardship and management of private lands and resources within Washington and Franklin County. Agricultural producers are continually improving agricultural practices, applying new science and technology, and implementing conservation practices that reduce agricultural impacts on critical areas, as well as maintain or increase the viability of the agricultural economy. In the County, agricultural producers have adopted a variety of practices to protect and enhance critical areas, and in turn, the four critical area functions and values (i.e., water quality, hydrology, soil health, and fish and wildlife habitat). This section will introduce the connection between conservation practices and critical area functions and values (Figure 4-1). Additionally, this section will discuss the conservation practices that have been implemented since 2011, highlighting the protections to critical areas these practices are already providing.

Figure 4-1
VSP Crosswalk – Functions and Values Connection with Conservation Practices



4.1 Conservation Practices that Protect Critical Area Functions and Values

As discussed in Section 3, each critical area provides specific functions and values to the landscape. Many conservation practices provide the same benefits to critical area functions and values in addition to maintaining agriculture viability.

Table 4-1 summarizes some of the practices that have been implemented by agricultural producers in the County under NRCS programs and illustrates how they protect and enhance critical area functions and values, in addition to promoting agricultural viability.

The FCD is responsible for providing technical guidance in identifying farming practices that promote agricultural viability and further the goals of this Work Plan to protect and enhance critical areas and associated functions and values. Appendix C provides a more comprehensive "toolbox" of example practices that have been or could be implemented by agricultural producers within the County.

Crop Rotations
In the County, crop rotations have become a standard farming practice that address resource concerns and promote agricultural viability. Crop rotation practices include managing land in such a way as to grow a sequence of various crops on the same piece of land to help improve soil health, nutrients, and moisture, and reduce soils lost to erosion.

Participation in Funded Programs
Federal, state, and local government, and private-sector programs and opportunities are available to support producers in addressing agricultural and resource concerns. See Section 6 for additional resources and technical assistance available to agricultural producers on a voluntary basis. **Participation in a government-funded program is not required for VSP participants.**

Voluntary Stewardship Program Checklist
The VSP Checklist in Attachment 1 is a helpful tool to help assess how the VSP could support individual agricultural producers. It includes additional examples of conservation practices that protect and enhance critical areas and promote agricultural viability.

Table 4-1
Examples of Critical Areas Conservation Practices in Franklin County (Implemented Under NRCS)

Example Practice	Applicability	Description	Critical Area Functions[1]		Agricultural Viability
Irrigation Management	Irrigated	Managing water volume, frequency, and application rate for efficiency	Water Quality	• Reduces runoff and erosion • Reduces transport of nutrients and sediment	• Soil quality • Yield and fertility • Reduced input costs
			Soil Health	• Manages leaching of salt and chemicals below the root zone	
Residue and Tillage Management	Dryland Irrigated	Managing crop and plant residue and limiting soil disturbance (e.g., no-till or reduced-till)	Water Quality	• Reduces runoff and erosion • Reduces transport of nutrients and sediment	• Soil quality and conservation • Weed management • Yield and fertility
			Hydrology	• Increases infiltration and decreases evapotranspiration to increase water availability	
			Soil Health	• Reduces soil disturbance and increases cover to reduce wind and water erosion	
			Habitat	• Provides food and cover for wildlife • Increases water availability	
Nutrient Management	Dryland Irrigated	Managing application of nutrients to minimize loss to runoff	Water Quality	• Reduces nutrients in surface and groundwater due to matching plant needs to the amount, timing, and placement of nutrients	• Soil quality • Yield and fertility • Reduced input costs
			Habitat	• Optimizes health and vigor of desired plant species • Increases food and cover for wildlife	
Prescribed Grazing	Rangeland Irrigated	Managing grazing and vegetation harvest to improve plant communities and manage weeds	Water Quality	• Reduces runoff and erosion • Reduces transport of nutrients and sediment	• Soil quality and conservation • Weed management • Yield and fertility
			Hydrology	• Increases infiltration and water availability	
			Soil Health	• 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	

Note:
1. As defined by the Conservation Practices Physical Effects matrix for each practice.

4.2 Changes Since 2011 Baseline

Since 2011, agricultural producers have implemented practices that provide protections to critical areas and promote agricultural viability through private projects and projects funded by federal, state, and local governments. Many existing practices are currently unaccounted for. One of the key purposes of the VSP and this Work Plan is to leverage existing resources by relying on existing local planning efforts, private-sector activities, and government programs to achieve Work Plan goals (RCW 36.70A.700(2)(d). The following subsections summarize documented conservation practices, implemented since 2011, that have likely protected or enhanced critical areas and improved agricultural viability over baseline conditions.

These documented practices likely represent only a subset of all the conservation practices implemented since 2011, because many agricultural producers in the County implement practices independent of government programs. Accounting for these improvements would require an extensive self-reporting and documentation processes that is not yet in place. Additionally, it should be acknowledged that, during this same time, there are likely some practices that have been discontinued. For example, the re-establishment of agriculture on lands managed in conservation (in 2011) can impact habitat and other functions.

It is expected that lands put into conservation are unlikely to be removed or relapse back to old practices (e.g., stock watering facilities and fencing). It is anticipated less than 2% of these types of practices will be removed or discontinued each year. There are other conservation practices (such as cover crops and prescribed grazing) where a higher rate of discontinuation (6%) is anticipated or more variability year to year in implementation is anticipated. See Table 4-2 for assumptions related to varying estimated disenrollment rates.

Table 4-2
Calculating Disenrollment for Conservation Practices[1]

Assumed Range of Disenrollment/ Discontinuation	Conservation Practice Category	Example Practices
None	**Easements and Infrastructure** • Permanent conservation practices	• Permanent easements • Major infrastructure

Lower
0 to 2%
	Conservation Investments
	• High barriers to entry/exit
	  - Conservation investments
	  - Maintenance cost
	  - Effectiveness
	• Increases land productivity
	• Lowers cost
		• Tillage management
		• Pest management
		• Nutrient management
		• Irrigation management
		• Stock watering facilities
		• Fencing

Assumed Range of Disenrollment/ Discontinuation	Conservation Practice Category	Example Practices

Higher
0 to 6%
	Conservation Actions
	• Low barriers to entry/exit
	  - Easily removed
	• Reduced land in production
	• Rotational use
	  - Market driven rotation
	• Reliance on unstable conservation funding or incentives (e.g., Conservation Reserve Program)
		• Habitat restoration
		• Prescribed grazing
		• Cover crop
		• Range planting

Note:
1 This table provides an assumed range of disenrollment/discontinuation of conservation practices. Disenrollment rates may be adjusted based on actual data collected during implementation.

Programs may see a higher reduction in enrollment with the expiration of long-term government contracts, such as the Conservation Reserve Program (CRP), which temporarily enhances wildlife habitat, but this will occur on agricultural lands that are historically cultivated and not part of designated critical areas. Measures and systems are typically put in place when lands are returned to production to conserve resources and protect potentially affected critical areas adjacent to lands no longer enrolled in CRP (see below for additional CRP information).

4.2.1 NRCS Conservation Practices

Since 2011, there have been nearly 400 conservation projects implemented on approximately 124,000 acres within the County through the NRCS-funded programs on agricultural lands (as shown in Figure 4-2). The benefit that conservation practices have on critical areas and related functions and values varies by practice. The following practices have been implemented:

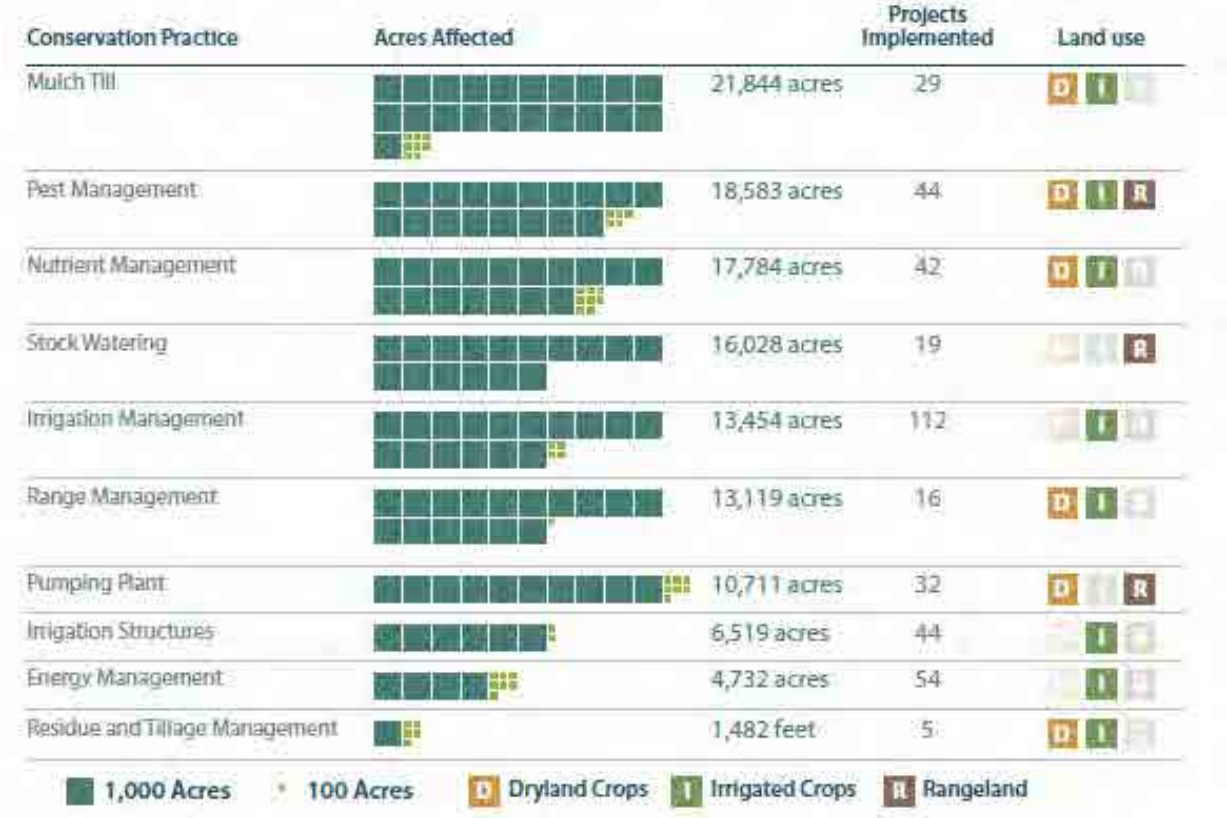
- Residue and tillage management actions to protect soil health and conservation
- Nutrient and pesticide management systems to protect water quality and conserve resources
- Prescribed grazing practices that improve plant communities and manage weeds
- Watering facility implementation that provides designated water sources for livestock that are located away from sensitive areas
- Irrigation water management practices to conserve water resources and reduce runoff

Figure 4-2 provides a summary of additional top NRCS practices implemented under the Environmental Quality Incentives Program (EQIP) and Wildlife Habitat Improvement Program (WHIP). As previously noted, these conservation practices and programs only represent a portion of the practices likely being implemented, and additional practices still remain unaccounted for in the

County. See Section 5 for additional information regarding the intersection of agricultural lands with conservation practices and critical areas.

Residue and Tillage Management
A beneficial and cost-effective method of reducing soil erosion is through crop residue and tillage management practices such as mulch till, no till/strip till/direct seed, and ridge till. Monitoring conducted as part of the Farmed Smart Partnership indicated the application of these practices can dramatically reduce erosion when compared to conventional practices (Pacific Northwest Direct Seed Association 2017).

Figure 4-2
NRCS Conservation Practices Implemented from 2011 to 2016



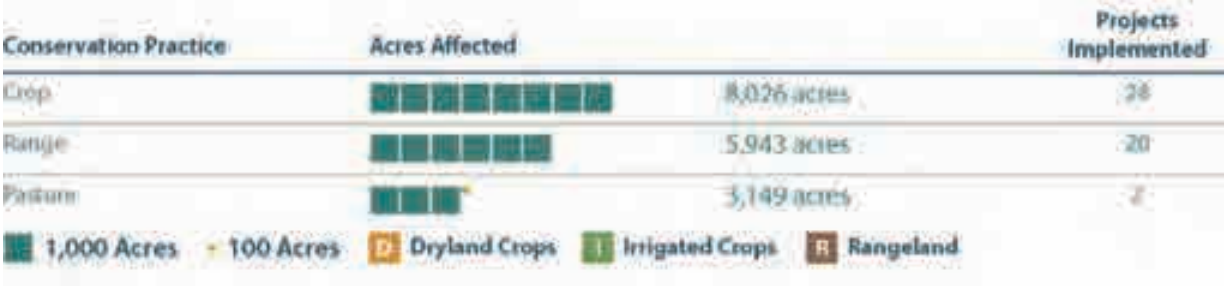
Notes:
1. Includes projects implemented under the Environmental Quality Incentives Program and Wildlife Habitat Improvement Program.
N/A: Not applicable
NRCS: Natural Resources Conservation Service
Source: NRCS data provided by Harold Crose with the Franklin Conservation District

Solar-powered electric livestock fencing

NRCS Practices Related to Energy Management
A total of 54 energy-management NRCS practices, including energy-management plans, have been administered in Franklin County from 2011 to 2016. These practices are intended to provide cost-effective conservation measures that reduce energy usage and/or increase energy efficiency in farm operations.

Figure 4-3 summarizes enhancement projects implemented under NRCS's Conservation Security Program (CSP), which provides additional incentives for producers to enhance existing practices by providing funding to actively manage, maintain, and expand existing conservation practices. Since 2011, there have been 50 CSP practices applied to approximately 17,000 acres, including crop, pasture, and range practices. Conservation practices under CSP can be reviewed during VSP Work Plan implementation to assess the level of enhancements that could be accounted toward the Work Plan goals and benchmarks.

Figure 4-3
NRCS Practices Implemented Under CSP from 2011 to 2016



Highly Erodible Lands
Highly erodible land (HEL) cropland is land with potential to exceed soil erosion standards. Many producers in the County currently have HEL plans and systems for agricultural activities on identified fields. HEL plans and systems include a suite of conservation practices that, when implemented, meet erosion standards.

In addition to practices currently implemented under EQIP, WHIP, Agricultural Water Enhancement Program (AWEP), and CSP, many agricultural producers farming highly erodible lands (HEL) must maintain a conservation system of practices that manages soil erosion in order to secure farming incentives under the Farm Service Agency (FSA) or NRCS.

4.2.2 Conservation District-led Projects

Numerous other projects have also been implemented through the FCD and are often funded directly by the district or programs administered by other agencies. Major conservation practices implemented by the FCD are identified in Table 4-3 and include practices such as irrigation water management and pest management.

Table 4-3
Conservation Practices Implemented by Franklin Conservation District from 2011 to 2016

Conservation Practice (NRCS Number)	Amount
Pumping Plant (533)	1.0 No.
Tree/Shrub Establishment (612)	2.0 Acres
Windbreak (380)	300 Linear Feet
Manure Transfer (634)	4.0 No.
Waste Storage Pond Lining (521A)	2.0 No.
Waste Storage Structure (313)	2.0 No.
Pest Management (Noxious Weeds) (595)	13,764.7 Acres
Cover Crops (340)	3,764.3 Acres
Irrigation Water Management (449)	21,644 Acres
Mulch Till (345)	603.7 Acres
Irrigation Conversion Sprinkler (442)	45.2 Acres
Irrigation Conversion Drip (441)	5 Acres

Pest Management

Mulch Till

4.2.3 Conservation Reserve Program

Congress created the CRP in the 1985 Farm Bill as a land conservation program to address concerns regarding soil erosion and as a cropland retirement mechanism to help a struggling farm economy due to the large surplus of crops. The CRP is a federally funded program, managed by the Farm

Service Agency (FSA), that pays a yearly rental payment in exchange for farmers removing cropland from agricultural production and establishing native plant species.

Acres enrolled in CRP vary year to year, depending on the availability of federal funding, which has decreased in recent years. Acreages enrolled in CRP decreased by approximately 25,000 acres between 2011 (111,451 acres) to 2016 (86,093 acres; USDA 2016). However, most of these lands are not designated as critical areas. Habitat benefits from CRP lands are considered enhancement under VSP and, if put back into production, are accounted for under baseline conditions. VSP reports will assess critical area effects (not acres enrolled) due to agricultural activities and implemented conservation practices on an aggregated watershed basis.

4.2.4 Changes in Agricultural Landcover Since 2011

Between 2011 and 2015, agricultural landcover decreased by approximately 500 acres (primarily in dryland) based on WSDA agricultural landcover data (WSDA 2011, 2015). This amounts to a loss of approximately 0.07% during a 4-year period, and some of these acres could be attributed to market conditions, land conversion to urban uses, the natural variations that occurs in the management of rangelands year to year, or variations in surveying methods applied to development landcover data. Note that changes shown in the data collected by WSDA may not reflect changes that are occurring on the ground. In these cases, updates to the data would be made by the CD in coordination with the Work Group. Table 4-4 provides a summary of change analysis in agricultural landcover between 2011 and 2015. This summary table indicates changes in agricultural landcover are occurring across dryland, irrigated land, and rangeland. The acreages removed from dryland agriculture are shown as gains in irrigated lands, showing potential water efficiency improvements.

Table 4-4
Agricultural Landcover Change Analysis from 2011 to 2015

Year	Agricultural Landcover Acres (Private)				
	Non-Agricultural	Dryland	Irrigated	Rangeland	Total in Agricultural Land
2011	18,023	248,410	235,233	255,682	739,325
2015	19,166	243,234	237,511	258,017	738,763
Change Since 2011	**1,143**	**-5,176**	**2,279**	**2,335**	**-563**

5 Goals, Benchmarks, and Adaptive Management

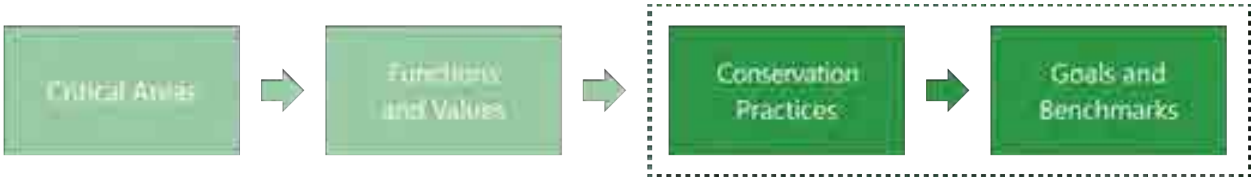
RCW 36.70A.720(1) requires that this Work Plan include goals and benchmarks for the protection and enhancement of critical areas, and protect critical areas while maintaining agriculture viability in the watershed. The benchmarks must be measurable, with the protection goals designed to protect critical area functions and values existing on July 22, 2011, and the enhancement goals designed to improve critical area functions and values through voluntary, incentive-based measures. Protection goals must be met for the VSP to remain viable, while the enhancement goals are funding-dependent.

This section of the Work Plan identifies the following elements:

- **Goals** for protecting and enhancing the County's critical areas and associated functions and values including: 1) water quality; 2) hydrology; 3) soil; and 4) habitat. See Section 2 for additional discussion on functions and values and their relationship to critical areas.
- **Measurable benchmarks** for protection and enhancement of critical areas based on participation in key conservation practices. See Section 4 for additional discussion on the connection between conservation practices and critical areas functions. Section 5.2 discusses the methods used to identify functional effects of conservation strategies and practices.
- **Indicators** for measurable metrics that can be analyzed over time to help assess whether anticipated protection and enhancement of critical area functions are occurring and focus technical assistance efforts where needed.
- **Monitoring and adaptive management plan** to adjust the Work Plan's benchmarks and activities based on performance results and review of indicators analyzed through monitoring efforts.

Figure 5-1 shows the conservation practices and their general connection with goals and benchmarks.

Figure 5-1
VSP Crosswalk – Conservation Practices Connection with Goals and Benchmarks



5.1 Goals

The VSP law requires VSP Work Plans include measurable benchmarks for the protection and enhancement of critical area functions and values, along with goals for participation by agricultural operators (RCW 36.70A.720 (1)(c)) to meet these benchmarks. Additionally, Work Plans are required to incorporate applicable data and plans into development of Work Plan goals and benchmarks (RCW 36.70A.720 (1)(a)). This section includes measurable benchmarks and identifies the following elements in support of RCW 36.70A.720 (1)(a) and (c):

- **Goals:** Participation goals are defined for the protection and enhancement of the County's critical areas and key functions. These goals are described in Tables 5-1 through 5-5 below.
- **Agricultural viability:** The ancillary benefits to agricultural production, profitability, and sustainability are also noted for each goal, as well as when financial assistance may be necessary to offset costs associated with implementing conservation practices, including the purchase of associated equipment or other costs.
- **Objectives:** Objectives are identified for each goal to help define specific applications that further each goal. To accomplish these objectives, agricultural producers can implement the conservation practices that are applicable to their land, agriculturally viable, and protect and/or enhance the critical area functions.
- **Key conservation practices:** Example conservation practices are tied to each objective; however, it is acknowledged other practices, including those administered outside of established government programs, can also help meet the objectives. Additionally, it is understood that new practices may emerge, and existing practices may be phased out during implementation of this Work Plan. Selection of example conservation practices for each objective are based on Conservation Practice Physical Effect (CPPE) scores for each practice (Appendix C).
- **Existing plans and programs:** See Appendix D for additional discussion on review of applicable data and plans as a part of the process for establishing measurable benchmarks and associated indicators.

Tables 5-1 through 5-5 include protection and/or enhancement goals for critical areas. These goals were developed consistent with the key plans and programs listed in each table. The key

conservation practices examples draw upon practices that are currently being implemented in the County through individual efforts or existing local, state, or federal programs. Existing plans and programs used in the Work Plan are described further in Section 6 and in Appendix D.

Table 5-1
Wetland Protection and/or Enhancement Goals

<table>
<tr><th colspan="3">Goal #1: Wetland Protection and/or Enhancement</th></tr>
<tr><td colspan="3">Maintain or improve wetlands
Protection and enhancement: Special emphasis on wetland and wetland buffers.
Agricultural viability: The wetland goal will be achieved while sustaining agriculture viability through:
Ancillary agriculture benefits from implemented practices (increased soil health/soil preservation, weed management, pollinator/beneficial organism, increased fertility, and pollinator/beneficial organism).
Providing regulatory assurances and support to implement voluntary practices.
Reducing costs associated with lost ecosystem services (e.g., flood control and water filtration).
Reducing input costs associated with chemicals and irrigation.
Financial incentives to offset start-up costs for new practices and infrastructure.</td></tr>
<tr><td colspan="3">Key Plans or Programs
Franklin Conservation District 5-Year Strategic Plan (2015)
Franklin Conservation District FY2018 Annual Work Plan (2017)
WDFW Management Recommendations for Washington’s Priority Habitats: Riparian (1997)
DNR Natural Heritage Program (rare plants and ecosystems)</td></tr>
<tr><th>Objectives</th><th>Critical Area Functions</th><th>Key Conservation Practices Examples</th></tr>
<tr><td>Protect and/or enhance wetland and wetland buffers directly</td><td>Water Quality, Hydrology, and Habitat</td><td>Fencing
Critical area planting
Restoration and management of rare and declining habitats
Channel bank vegetation
Wetland enhancement/restoration</td></tr>
<tr><td>Protect and/or enhance acres managed using techniques that limit water or wind erosion of soil, or erosion due to unrestricted livestock access, or soil compaction</td><td>Water Quality and Hydrology</td><td>Residue and tillage management/mulch till
Prescribed grazing
Conservation cover
Tree/shrub establishment, restoration and management of rare and declining habitats, critical area planting
Irrigation water management and pipelines</td></tr>
<tr><td>Protect and/or enhance acres managed under chemical and nutrient input controls, including acres near wetlands providing habitat for pollinators, birds, and other wildlife</td><td>Water Quality and Habitat</td><td>Nutrient management
Pest management
Heavy-use area protection
Manure transfer
Irrigation water management and pipelines</td></tr>
</table>

Goal #1: Wetland Protection and/or Enhancement		
Protect and/or enhance acres managed under natural filtration practices	Water Quality	• Residue and tillage management/mulch till • Conservation cover • Critical area planting • Tree/shrub establishment

Table 5-2
Critical Aquifer Recharge Area Protection and/or Enhancement Goals

Goal #2 – Critical Aquifer Recharge Area Protection and/or Enhancement		
Maintain or improve critical aquifers through implementation of key conservation practices that reduce inputs, including nutrients and other contaminants. • **Protection and enhancement:** Special emphasis on critical aquifer recharge areas. • **Agricultural viability:** The CARA goal will be achieved while sustaining agriculture viability through: – Ancillary agriculture benefits from implemented practices (increased soil health, increased soil moisture, weed management, pollinator/beneficial organism, and increased fertility). – Reducing input costs associated with chemicals. – Reducing costs associated with irrigation and livestock watering. – Financial incentives to offset start-up costs for new practices and infrastructure. – Hazardous materials spill containment and cleanup.		
Key Plans or Programs • Franklin Conservation District 5-Year Strategic Plan (2015) • Franklin Conservation District FY2018 Annual Work Plan (2017) • GWMA Plan for Adams, Franklin, and Grant Counties (2001)		
Objectives	**Critical Area Functions**	**Key Conservation Practices Examples**
Protect and/or enhance acres managed under chemical and nutrient input controls	Water Quality	• Nutrient management • Pest management • Heavy-use area protection • Irrigation water management and pipelines
Protect and/or enhance acres managed under natural filtration practices	Water Quality	• Residue and tillage management/mulch till • Conservation cover • Critical area planting • Tree/shrub establishment
Protect and/or enhance acres managed using techniques for water conservation	Hydrology	• Irrigation water management • Irrigation pipeline • Irrigation sprinkler and micro-irrigation system

Table 5-3
Frequently Flooded Area Protection and/or Enhancement Goals

Goal #3 – Frequently Flooded Area Protection and/or Enhancement		
Maintain or improve frequently flooded areas. • **Protection and enhancement:** Special emphasis on areas supporting FFAs. • **Agricultural viability:** The FFA goal will be achieved while sustaining agriculture viability through: – Ancillary agriculture benefits from implemented practices (maximize availability of surface withdrawals for irrigation, flood control benefits/soil preservation, increased soil moisture, weed management, and pollinator/beneficial organism). – Reducing costs associated with flood management and flood cleanup. – Financial incentives to offset start-up costs for new practices and infrastructure.		
Key Plans or Programs • Franklin Conservation District 5-Year Strategic Plan (2015) • Franklin Conservation District FY2018 Annual Work Plan (2017) • Franklin County Shoreline Master Program Update: Shoreline Inventory, Analysis, and Characterization Report (Anchor QEA 2014) • Final Draft Restoration Plan: Franklin County Shoreline Master Program Update (Anchor QEA 2016) • WDFW Management Recommendations for Washington's Priority Habitats: Riparian (1997)		
Objectives	**Critical Area Functions**	**Key Conservation Practices Examples**
Protect frequently flooded areas directly	Water Quality, Hydrology, Soil Health, and Habitat	• Fencing • Critical area planting • Restoration and management of rare and declining habitats • Channel bank vegetation • Wetland enhancement/restoration • Animal trails and walkways • Streambank and shoreline protection
Protect and/or enhance acres managed using techniques that limit soil compaction or trampling of habitat	Soil Health	• Prescribed grazing • Watering facility
Protect and/or enhance acres managed using techniques that promote soil's water-holding capacity	Soil Health	• Residue and tillage management/mulch till or no-till • Conservation cover • Mulching

Table 5-4
Geological Hazard Area Protection and/or Enhancement Goals

Goal #4 – Geological Hazard Area Protection and/or Enhancement		
Protect and enhance available soil for agriculture within the County. • **Protection and enhancement:** Special emphasis on areas with prime soil for agriculture and geologic hazard areas that are at greatest risk of soil erosion. • **Agricultural viability:** The geologic hazard goal will be achieved while sustaining agriculture viability through: • Preserving land available for agriculture. • Ancillary agriculture benefits from implemented practices (increased soil moisture, weed management, and pollinator/beneficial organism). • Reducing costs associated with soil replenishment and flood cleanup. • Financial incentives to offset start-up costs for new practices and infrastructure.		
Key Plans or Programs • Franklin Conservation District 5-Year Strategic Plan (2015) • Franklin Conservation District FY2018 Annual Work Plan (2017)		
Objectives	**Critical Area Functions**	**Key Conservation Practices Examples**
Protect and/or enhance acres managed using techniques that limit water or wind erosion of soil, or erosion due to unrestricted access of livestock	Water Quality, Hydrology, Soil Health, and Habitat	• Residue and tillage management/mulch till • Prescribed grazing • Conservation cover • Tree/shrub establishment, restoration and management of rare and declining habitats, critical area planting • Irrigation water management and pipelines

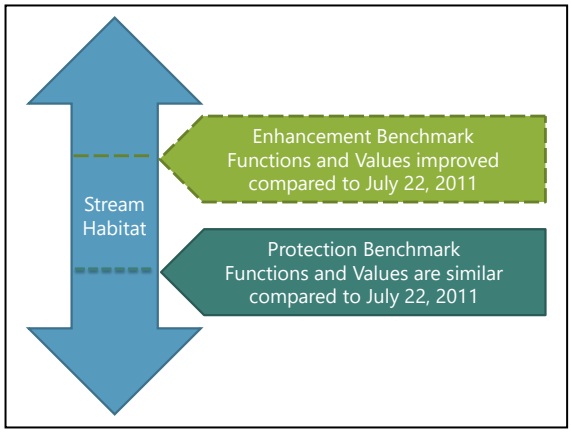
Table 5-5
Fish and Wildlife Habitat Protection and/or Enhancement Goals

Goal #5 – Fish and Wildlife Habitat Protection and/or Enhancement		
Protect and enhance existing terrestrial habitat areas. • **Protection and enhancement:** Special emphasis on declining and rare habitats, habitat connectivity, and those habitats or watercourses that support candidate, threatened, and endangered species and priority and sensitive species. • **Agricultural viability:** The habitat goal will be achieved while sustaining agriculture viability through: • Providing regulatory assurances and support to implement voluntary practices. • Ancillary agriculture benefits from implemented practices (soil conservation, weed management, and pollinator/beneficial organism). • Reducing costs associated with lost ecosystem services (e.g., flood control and water filtration). • Financial incentives to offset start-up costs for new practices and infrastructure.		
Key Plans or Programs • Franklin Conservation District 5-Year Strategic Plan (2015) • Franklin Conservation District FY2018 Annual Work Plan (2017) • Franklin County Shoreline Master Program Update: Shoreline Inventory, Analysis, and Characterization Report (Anchor QEA 2014) • Final Draft Restoration Plan: Franklin County Shoreline Master Program Update (Anchor QEA 2016) • WDFW Management Recommendations for Washington's Priority Habitats: Riparian (1997) • WDFW Management Recommendations for Washington's Priority Habitats: Managing Shrub-Steppe in Developing Landscapes (2011) • DNR Natural Heritage Program (rare plants and ecosystems)		
Objectives	**Critical Area Functions**	**Key Conservation Practices Examples**
Protect and/or enhance acres managed using techniques that limit adverse impacts to native plants and animals (e.g., shrub-steppe habitat)	Water Quality, Hydrology, Soil Health, and Habitat	• Prescribed grazing • Watering facility • Fencing
Protect and/or enhance acres managed using techniques that promote water management to reduce irrigation water inputs/impacts to native fish and wildlife and their habitats	Habitat	• Irrigation water management
Restore existing or degraded native habitat (e.g., shrub-steppe habitat) and consider practices in areas that encourage habitat connectivity	Water Quality, Hydrology, Soil Health, and Habitat	• Conservation cover • Critical area planting • Restoration and management of rare and declining habitats • Tree/shrub establishment • Upland wildlife habitat management

Goal #5 – Fish and Wildlife Habitat Protection and/or Enhancement		
Protect and/or enhance acres managed using techniques that limit shoreline and watercourse degradation and enhance shoreline areas and watercourses	Habitat, Water Quality, and Hydrology	• Watering facility • Critical area planting • Stream habitat improvement and management • Channel bed stabilization • Fish and wildlife structure
Protect and/or enhance acres managed under chemical and nutrient input controls, including acres near habitat for pollinators, birds, and other wildlife	Water Quality and Habitat	• Nutrient management • Pest management • Heavy-use area protection • Manure transfer • Irrigation water management and pipelines

5.2 Measurable Benchmarks

This section identifies the measurable benchmarks required by RCW 36.70A.720 (1)(e) for: 1) protection of critical area functions and values; and 2) enhancement of critical areas functions and values through voluntary, incentive-based measures. Protection and enhancement benchmarks are based on agricultural producer participation in key conservation practices that further the Work Plan's goals identified in Section 5.1.



Establishing Baseline Monitoring per RCW 36.70A.720 (1)(i)
This section describes measurable benchmarks for participation in conservation practices. Conservation practices have been implemented since 2011 to improve agricultural productivity, reduce erosion, and improve soil quality from the July 22, 2011 baseline.

5.2.1 Methods

Benchmarks are measured by tracking new and continued implementations of various conservation practices and associated stewardship on agricultural lands. Over time, the implementation of these conservation practices will be used to demonstrate that VSP is meeting the protection goals and determine whether or not VSP is achieving the enhancement goals and benchmarks. See Appendix C for initial results based on 2011 to 2016 participation data in key conservation practices.

The Work Plan includes two measurable benchmarks per RCW 36.70A.720 (1)(e):

1. **Protection Benchmarks** (preventing the degradation of baseline functions existing July 22, 2011) – The protection benchmark must be met to continue the voluntary, non-regulatory approach under VSP. For each protection goal, participation benchmarks are also identified and are designed to provide quantifiable measures that will ensure protection of the County's critical areas and associated functions and values is being achieved. Ultimately, the goals and benchmarks are evaluated based on whether critical areas and associated functions and values are protected and/or enhanced. This will be determined by evaluating random samples of critical areas (including a representation of lands with conservation practices documented and lands where practices are not documented) using aerial imagery, GIS methods, and site visits as described in this section.
2. **Enhancement Benchmarks** (enhancements improve baseline critical areas and associated functions and values through voluntary and incentive-based measures) – Meeting enhancement goals is encouraged, but not required, to continue the voluntary, non-regulatory program under VSP for protecting critical areas. Monitoring of conservation practices and review of indicators will occur at minimum every 2 years, with information to support the review and reporting collected annually. At each 5-year benchmark reporting period, voluntary enhancements of critical area conditions on lands used for agricultural activities are promoted and accounted for. Benchmarks for enhancement are specific to the County and indicate voluntary measures are leading to desired improvements in critical area functions and values. Enhancement also provides a measure of certainty that the VSP protection goal will be met if some unforeseen, future loss of critical areas or associated functions and values occurs.

Benchmark quantities for conservation practice enrollment are provided in 5-year reporting increments (2021 and 2026). The following methods were used to establish protection and enhancement benchmark values for conservation practice participation:

- **Measuring historical enrollment data** in key conservation practices to develop an average annual enrollment quantity for each practice. Historical enrollment data include NRCS and FCD-led practices that were reported between 2011 and 2016.
- **Connecting conservation practices with specific benchmark goals** based on the CPPE scores for each practice developed by USDA (NRCS 2017). CPPE scores range between -5 and +5, with positive scores denoting a beneficial effect and negative scores having an adverse effect. USDA CPPE scores were averaged for the four key functions and adjusted to include scoring criteria applicable to Franklin County. See Appendix C for details on how averaged CPPE scores were developed for Franklin County. The CPPE scoring is an interim step in determining whether protection and/or enhancement has occurred compared to the VSP 2011 baseline. Under VSP, the relative changes in functions affected from a given conservation practice will be tracked (e.g., a +4 increase moving to from a -2 to +2, rather than the CPPE score of +2).

- **Setting anticipated disenrollment rate** of agriculture lands that may not continue to maintain the conservation practice past the required lifespan or following the end of a contract, or for other disenrollment reasons. Disenrollment or abandonment of practices can be monitored to reduce this rate further based on actual data. The disenrollment rate may be adjusted based on data collected during implementation.
- **Setting protection benchmarks and performance objectives** by summing the enrollment goal to maintain baseline practices for protection of critical area function by replacing all lost functions associated with disenrollment or abandonment of practices (acres calculated by anticipated disenrollment rates; see Table 4-2).
- **Calculating change from baseline conditions** is the final step in determining the effect that conservation practices have on critical areas functions and values. This is completed by converting the quantity of conservation practices (based on CPPE scores) to a functions score. This acts to normalize the data and account for the differing amount of benefit provided by different practices. Initial results based on 2011 to 2016 participation data in key stewardship practices are provided in Appendix C.

2011 Baseline Condition	**=**	**(Newly Enrolled Acres x Physical Effects Score)**	**-**	**(Disenrolled Acres x Physical Effect Score)**

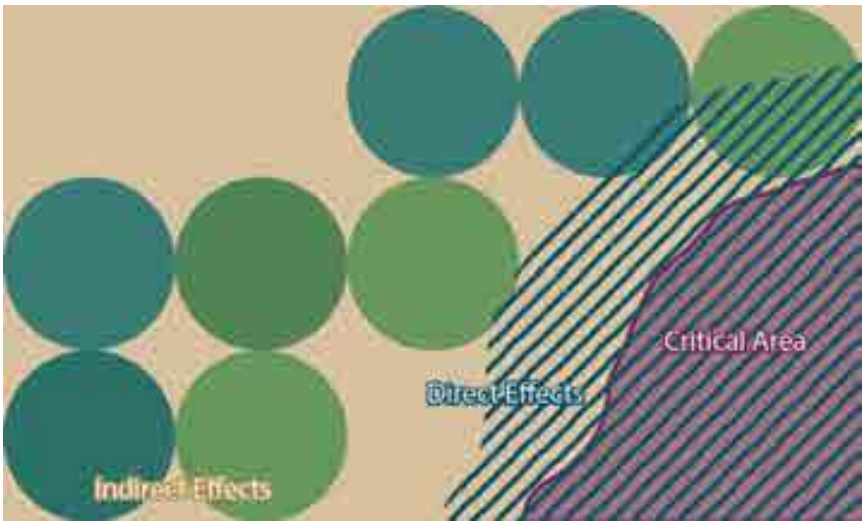
What is Conservation Practice Physical Effect (CPPE)?
The CPPE describes how Natural Resources Conservation Service practices affect human-economic environment (e.g., Agricultural Viability) and natural resources (e.g., Critical Functions). This planning tool provides a quantitative score detailing the magnitude of the practice's effect on the resource. Technical reports for each practice also include a qualitative statement on the impact of each practice on soil, water, air, plants, animals, energy and labor, capital, and risk. A summary of the practices with CPPE scores are provided in Appendix C. The FCD will use discretion in determining which CPPE best represents the physical effects of conservation practices on critical areas in the County based on local conditions and practices.

- **Setting enhancement benchmarks and performance objectives** by:
  - Including project acres that have implemented between 2011 and 2016 above the protection performance objectives.
  - Enhancement benchmarks and performance objectives are in addition to the protection benchmarks; therefore, estimated disenrollment acres (protection performance objectives value) have been incorporated into the enhancement performance objectives value.

Enhancement Performance Objective	**=**	**(Enrolled Acres x Physical Effect Score)** *based on 2011 to 2016 enrollment data*	**-**	**Protection Performance Objective**

Conservation practices can be implemented within or directly adjacent to a critical area (see Figure 5-2 for a conceptual representation). An example of a direct effect would include implementing wetland restoration practices within a critical area or critical buffer as designated in the Franklin County Code for consistency with the Franklin County Critical Areas Ordinance (Appendix B-3). Indirect effects occur within agricultural areas that are not adjacent to critical areas or critical area buffers, but still have indirect effects on resource functions.

Figure 5-2
Direct and Indirect Effects of Practices on Critical Area Functions



5.2.2 Benchmarks

Work Plan benchmarks are focused on measuring and tracking producer participation in implementing key conservation practices identified by the Work Group as having a clear benefit to one or more critical areas or associated functions and values.

Table 5-6 provides a crosswalk of the key conservation practices identified for the Work Plan benchmarks to critical areas, function protections based on the overall averaged CPPE function effects score, and agricultural viability aims. The CPPE scoring shown in Table 5-6 indicates the most beneficial effects to functions in teal-colored boxes (ranked from slight to high beneficial effects), neutral or no effects in gray, and the detrimental effects in dark blue (ranked from slight to high detrimental effects). As previously discussed, it's important to note that the relative changes in functions affected from a given conservation practice will be tracked in relation to baseline conditions. See Appendix C for additional information on methods applied for linking conservation practices to critical area protections using CPPE function effects and a more comprehensive list of example conservation practices.

Table 5-7 provides a summary of protection and enhancement measurable participation benchmarks for the 5-year reporting increments (2021 and 2026). The protection performance standard for each conservation practice is based on historical records. New practices will often replace an existing practice. Trends in conservation practices and updates to the protection performance standard that reflect the move to new conservation practices will be included in the 2- and 5-year reports. Acreages may be adjusted as needed to reflect the higher or lower physical effect of the new practice.

As indicated in Table 5-7 (last column), total participation acres in in key conservation practices since 2011 are overcoming the anticipated reduction in acres (or other measure) with conservation practices placed (protection benchmark) and additional acreages with conservation practices since 2011 are accounted in the enhancement objectives.

Current Performance Based on 2011 to 2016 Participation Data
As indicated in Table 5-7 (last column), total participation acres in key conservation practices since 2011 have overcome the anticipated reduction in acres (or other measure). Protection and enhancement performance objectives for 2021 and 2026 (participation acres) have been met based on reported acres in conservation practices from 2011 to 2016. Additionally, the acres that have been reported in conservation practices from 2011 to 2016 have overcome the estimated acres for discontinued practices through 2026.

The Work Plan will rely on adaptive management procedures (Section 5.4) to help assess whether protection and enhancement of critical area functions are occurring, which will be reported as described in Section 6.3.

Table 5-6
Key Conservation Practices Crosswalk to Critical Areas, National Functions Scores, and Agricultural Viability

Conservation Practices			Critical Area Protections					Protection Metrics for Critical Area Functions (by averaged CPPE Function Effects Score)[2]				Agricultural Viability Aims
Type		Key Practices[1]	WET	HCA	CARA	GHA	FFA	Water Quality	Hydrology	Habitat	Soil	
Indirect Intersects	Residue and Tillage Management	• Reduced Till • No Till/Direct Seed • Mulch Till	●	●		●		■■■	■	■	■■	- Protect against erosion risk - Protect soil health - Reduce invasive and nuisance species - Promote yield and fertility
	Pest Management	• Integrated Pest Management o Chemical, biological, or a combination o Monitoring and adaptive management	●	●	●	●		■■■	■	■■	■■	- Protect soil health - Reduce invasive and nuisance species - Provide pollinator species/beneficial organisms habitat
	Nutrient Management	• Nutrient Management	●	●	●			■■■	■	■	■	- Protect soil health - Reduce invasive and nuisance species - Reduce input costs
	Water Management[3]	• Irrigation Water Management • Irrigation System Sprinkler	●	●	●	●		■■	■■	■■	■	- Protect against erosion risk - Protect soil health - Reduce input costs
	Livestock Management[4]	• Prescribed Grazing • Stock Watering Facilities	●	●		●	●	■	■	■■	■■	- Protect against erosion risk - Protect soil health - Reduce invasive and nuisance species - Promote yield and fertility
	Soil Management	• Cover Crop • Mulching • Conservation Crop Rotation Cross Wind Ridges	●		●			■■	■	■	■■	- Protect against erosion risk - Protect soil health - Reduce invasive and nuisance species - Provide pollinator species/beneficial organisms habitat - Promote yield and fertility
Direct Intersects[5]	Habitat Management	• Conservation Cover • Critical Area Planting • Upland Wildlife Habitat Management • Fencing • Tree/Shrub Establishment • Restoration and Management of Rare and Declining Habitats • Access Control	●		●	●	●	■	■	■■	■	- Protect against erosion risk - Protect soil health - Reduce invasive and nuisance species - Provide pollinator species/beneficial organisms habitat

Notes:
1. Key practices include those practices that address resource concerns and critical areas protections and are widely implemented, anticipated for continued application, or identified as major practice trends anticipated in the future.
2. The Natural Resources Conservation Service (NRCS) CPPE matrix was relied on to develop average function effects scores for the key practices. See Appendix C – Attachment 2, for full suite of conservation practices' CPPE scores.
3. Water management focuses on key practices that address on-field resource concerns and management where irrigation activities are already occurring. Conveyance infrastructure, such as irrigation pipelines, is not considered in the group of key practices.
4. Livestock management focuses on key practices that address on-field resource concerns and management. Conveyance infrastructure, such as livestock pipelines, is not considered in the group of key practices.
5. This includes critical areas and critical area buffers for consistency with the Franklin County Critical Areas Ordinance (Appendix B-3).

CPPE: Conservation Practice Physical Effect

Key						
Beneficial Effects			Neutral or No Effects	Adverse Effects		
High	Medium	Slight		Slight	Moderate	High

Table 5-7
Protection and/or Enhancement Benchmarks and Objectives

Key Conservation Practices[1]		Historical Participation Data (2011 – 2016)		Protection Benchmarks and Performance Objectives[1, 2]			Enhancement Benchmarks and Performance Objectives[1, 2]			2011 – 2016 Enrollment Data
		Average Annual Participation in Key Practices	Estimated Yearly Reduction of Conservation Practices	Protection Benchmark	2021 Performance Objectives[3]	2026 Performance Objectives[3]	Enhancement Benchmark	2021 Performance Objectives[3]	2026 Performance Objectives[3]	Total Acres in NRCS and CD-led Programs
Indirect Intersects	Residue and Tillage Management	3,888 acres	272 acres (7%)	No net loss of acres managed under conservation practices No net loss of feet or units managed for protection	2,721 acres	4,082 acres	Enrolled enhancement units (e.g., acres and feet) are sufficient to offset identified agricultural degradations and maintain baseline conditions, based on: • Implemented projects from 2011 – 2016 • Excluded protection benchmarks (estimated annual reduction or discontinuation of conservation practices since 2011 at time of reporting	8,941 acres	19,243 acres	23,325 acres
	Pest Management	3,180 acres	223 acres (7%)		2,226 acres	3,339 acres		7,313 acres	15,739 acres	19,078 acres
	Nutrient Management	2,958 acres	207 acres (7%)		2,071 acres	3,106 acres		6,803 acres	14,642 acres	17,748 acres
	Water Management[4]	2,303 acres	69 acres (3%)		691 acres	1,036 acres		6,218 acres	12,781 acres	13,818 acres
	Livestock Management[5]	643 acres 8 stock watering facilities	45 acres (7%) 0.25 watering facilities (3%)		450 acres 2.5 watering facilities	675 acres 4 watering facilities		1,478 acres 23 watering facilities	3,181 acres 46 watering facilities	3,856 acres 50 watering facilities
	Soil Management	42 acres	3 acres (7%)		29 acres	44 acres		96 acres	207 acres	251 acres
Direct Intersects[7]	Habitat Management[6]	196 acres 4,942 feet	2 acres (7%) 148 feet (3%)		23 acres 1,483 feet	33 acres 2,224 feet		75 acres 13,343 feet	162 acres 27,428 feet	196 acres 29,652 feet

Notes:

1. See Table 5-6 for list of key conservation practices for each management strategy, which includes those practices 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. Benchmarks and performance objectives for protection and/or enhancement are based upon the reported historical NRCS and FCD participation data (2011-2016) in key practices (see Note 1). No net loss and enhancements will be measured based on estimated annual disenrollment rates from key practices from the 2011 baseline.
3. Benchmarks and performance objectives for protection and/or enhancement are anticipated to be adapted as new technologies and practices are applied by producers and unanticipated changes in environmental and market conditions which would be addressed through the adaptive management process. Benchmarks and performance objectives are based on estimated disenrollment rates. A more accurate estimate and understanding of which practices are discontinued can be used to modify these benchmarks.
4. Water management focuses on key practices that address on-field resource concerns and management where irrigation activities are already occurring. Conveyance infrastructure, such as irrigation pipelines contracted under NRCS (approximately 53,000 feet in 2011 – 2016) are not included.
5. Livestock management focuses on key practices that address on-field resource concerns and management. Conveyance infrastructure, such as livestock pipelines contracted under NRCS (approximately 12,700 feet in 2011 – 2016) are not included.
1. Performance objectives for habitat management includes practices measured in acres (e.g., conservation cover) and practices measured in feet (e.g., fencing). This includes critical areas and critical area buffers per the Franklin County Critical Areas Ordinance (Appendix B-3).
2. Performance objectives for habitat management includes practices measured in acres (e.g., conservation cover) and practices measured in feet (e.g., grassed waterways).

NRCS: Natural Resources Conservation Service

5.3 Indicators

Indicators are measurable metrics associated with specific environmental variables, (e.g. nitrate concentrations in a well or stream flow at a particular location). Metrics can be analyzed over time to understand longer term trends related to specific critical area functions and values. Indicator data will be reviewed at least every 2 years to help focus technical assistance efforts, assess if the anticipated protection and/or enhancement of critical area functions is occurring, and identify any positive or negative trends that might need follow up prior to the 5-year performance review.

If an indicator shows a loss or gain in the baseline condition for a critical area function, it can be compared to the direct monitoring performance objectives for conservation practices implemented, or the indirect monitoring indicators. If this analysis does not account for the change, a more targeted evaluation and analysis of the specific effects of agricultural activities can be made for the applicable parameter(s). This analysis would be used to inform if the VSP is meeting the protection standard for critical area functions within agricultural areas and the degree to which non-agricultural factors are influencing one or more indicators.

Indicators affected by agricultural and non-agricultural factors will generally not be used for purposes of informing whether protection of baseline conditions is being achieved or goals and benchmarks are being met due to the cost and difficulty involved in separating agricultural effects from non-agricultural effects, unless the contribution of agricultural activities is understood. Such indicators may, however, be used to identify resource trends and focus enhancement efforts on high priority areas and/or to trigger adaptive management measures. If new information is collected during monitoring that is not confidential, it will be made available to the appropriate agencies as applicable to assist their monitoring programs.

The following indicators relate to the four major critical area functions; monitoring of these indicators is summarized in Table 5-10:

1. **Water quality indicators:**
    - **Surface water** quality indicators will include Category 4 and 5 303(d) listings and general water quality information collected by the South Columbia Basin Irrigation District within their irrigation water delivery system. Indicators will be focused on parameters that potentially have an agricultural source. For the 303(d) listings, Category 4 includes polluted waters that do not require a Total Maximum Daily Load (TMDL), and Category 5 waters are polluted and require a TMDL or other water quality improvement project. Appendix B-5 provides a listing of these parameters found in the County in 2016, acknowledging these parameters may be updated in the future. 303(d) listings within the County can be monitored using Washington State Department of Ecology's (Ecology) Water Quality tools found online at:

http://www.ecy.wa.gov/programs/wq/303d/index.html. For the South Columbia Basin Irrigation District, water quality parameters will be evaluated for any trends in potential agricultural source parameters, compared to 2011 baseline conditions.

- **Groundwater** quality indicators will include review of data collected by public water drinking systems (Group A), primarily focused on Connell, Mesa and Basin City; and other well monitoring data collected by the FCD in areas where Irrigated Group A soils exist and adjacent to main canals.

2. **Hydrology indicators** will include tracking effects from high flood flows, which only happen periodically in the County. Tracking stream flow is not an indicator in Franklin County because changes in hydrology result from changes in CBP management and operations, which is not part of the VSP. There is one active USGS gage in the county on Esquatzel Coulee, a CBP-operated channel. Therefore, it is not an effective indicator of changes in hydrology from agricultural practices and should not be used for adaptive management purposes. Columbia and Snake river flow data would also not provide effective indicators of localized changes in hydrology due to the controlled nature of these rivers.
3. **Soil function indicators** will include USDA Natural Resources Inventory monitoring results related to erosion and soil functions and fertility. This monitoring should focus on locations within or adjacent to critical areas in relation to erosion issues, allowing for more natural erosion rates upland of critical areas. This monitoring should also help inform whether the Work Plan is achieving no increase in suitable agriculture soil loss trends overtime. Interactive data viewers at the State level are available here: https://www.nrcs.usda.gov/wps/portal/nrcs/rca/national/technical/nra/rca/ida/.
4. **Habitat indicators** will be based on priority habitats and species data available through WDFW and other related information that might or is expected to become available in the future. Such data sources include the National Agriculture Inventory Program (NAIP), the WSDA agricultural lands survey, remote sensing through WDFW's High Resolution Change Detection program, or other GIS approaches. These resources will be used for habitat assessment comparing 2011 baseline conditions with the most recent aerial imagery available. At least every 2 years, the most recent NAIP and other available imagery will be evaluated to identify trends (positive or negative) that may be occurring related to habitat, and in support of the 5- and 10-year review periods. Additionally, ground-truthing will be needed to ensure change detection data made available fit the scope and jurisdiction of the VSP, and that agricultural activities were the cause of any identified degradations. Review of PHS updates and other relevant information comparisons against the 2011 baseline conditions will be done in coordination with WDFW. Random samples of habitat areas will include a representation of lands with conservation practices implemented by VSP participants as well as other lands that may or may not have practices implemented on them, and these results will be extrapolated to the larger watershed

analysis unit areas and the County, to more accurately characterize critical areas protections achieved.

Although not determinative of VSP success in maintaining 2011 baseline or better conditions as affected by agricultural activities and conservation practices, participation measures and monitoring indicators provide important information for evaluating the VSP performance and adaptive management actions described in Section 5.4. It is also acknowledged that indicators data are limited and not always directly connected to direct evaluation of program performance. Where data are insufficient (including associated data sample sizes), it will be acknowledged as part of reporting, and adaptive management measures described in Section 5.4 will be applied as part of implementation to address these data shortfalls where possible within program constraints.

Guiding Principles for Aerial Imagery Interpretation
High resolution change detection or other public available aerial imagery is described as a potential monitoring tool for habitat indicators. This Work Plan includes the following Guiding Principles to ensure imagery interpretation would be reported at a watershed scale, recognize the voluntary nature of the VSP program, and the privacy concerns of volunteers and landowners:

- Monitoring activities that involve imagery should focus on publicly-available imagery.
- Monitoring should be reported at the watershed or County scale, not the parcel scale.
- Imagery evaluation should include a random sampling of areas within the Work Plan's watershed analysis units.
- The Work Group will determine what entities are suited to interpreting the imagery, such as Washington State University or other educational or professional bodies. The entity should not have other roles in enforcement given the voluntary, watershed-scale of the Work Plan.

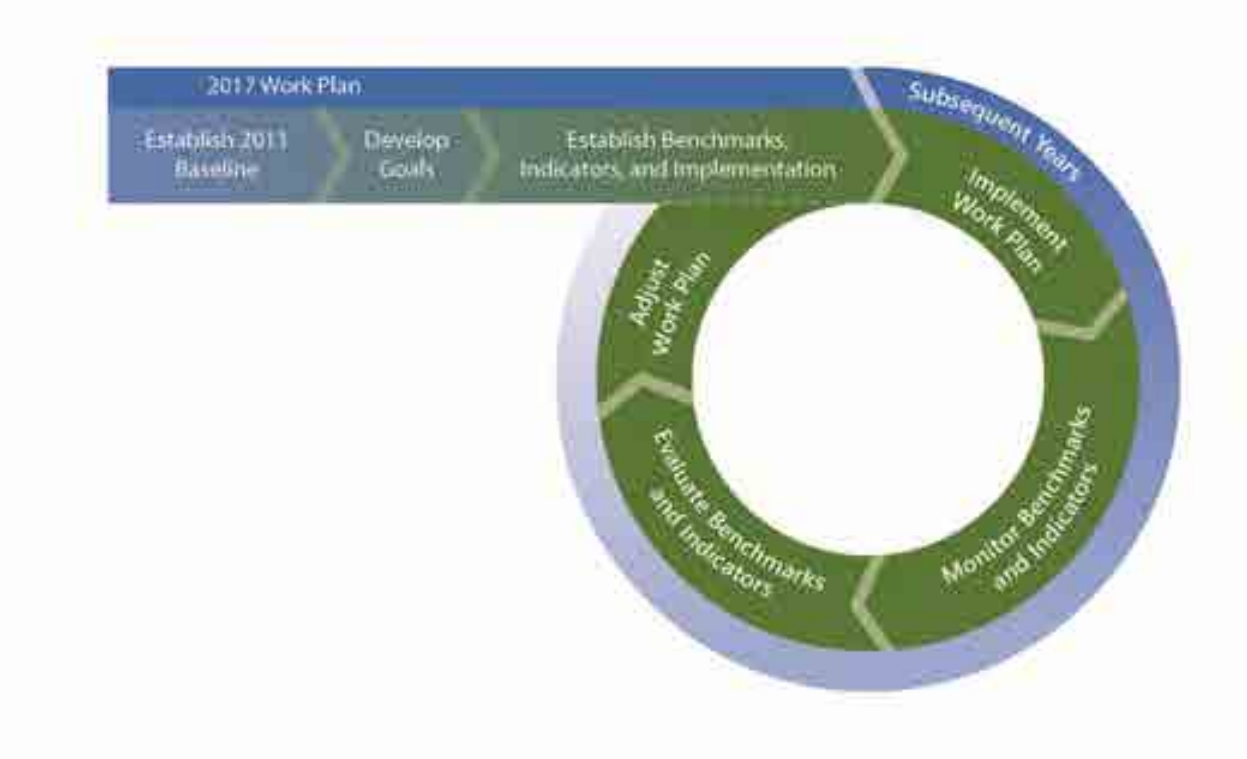
It's important to note that changes to baseline conditions outside of VSP are likely to occur due to effects from climate change, natural events (e.g., wild fires), changes in surface hydrology from future water supply improvements, or other changes outside of the scope of VSP. Regarding agricultural viability, national and international trends in the market for agricultural products are beyond the control of the Work Plan.

5.4 Monitoring and Adaptive Management

Adaptive management typically consists of a monitoring system to identify changes in the environment coupled with a response system to adjust the activities based on performance results and review of indicators information. The adaptive management system would be applied if the performance review in Year 5 of implementation suggests the VSP program may not be protective of critical areas existing in 2011. It would also be applied as early as Year 3, if after a 2-year review is completed, and the results identify an indicator has been met and that the effect is from agriculture.

The adaptive management system for the Franklin County VSP consists of the following five key sequential elements, as illustrated in Figure 5-3.

Figure 5-3
Adaptive Management System



1. **Assess** – Data on participation goals and the indicators previously described are compiled by the VSP Lead, FCD. The compiled information is used to identify issues, refine objectives, and understand if benchmarks are effective in protecting or voluntarily enhancing critical area functions and values.
2. **Update Benchmarks** – Based on the results of the assessment stage, updates to the protection and voluntary, incentive-based enhancement benchmarks could occur. These updates could represent changes to the level of participation necessary to meet a specific protection or enhancement benchmark as established by the Work Group. These updates could also reflect a change in the goals for a specific watershed or critical area function.
3. **Implement and Monitor** – The approved work plan is put into action, concurrently with monitoring focused on documenting the protection or voluntary enhancement of critical area functions and values. Monitoring data are collected on various indicators and used to determine if specific functions and values are being protected.
4. **Evaluate** – Participation data are evaluated relative to the protection and voluntary, incentive-based enhancement goals. Differences between targeted goals and results are identified, and the causes for those differences are investigated, including consideration of

participation measures and indicators. Goal adjustments are made as needed to maintain protection of critical area functions and values.

5. **Adjust** – Information learned in previous steps is used to adjust the participation benchmarks, conservation practices, or level of incentive for voluntary enhancement. If the Work Group determines protection goals and benchmarks are being met, the FCD will continue implementation of the Work Plan. If protection goals and benchmarks are not being met, the Work Group will submit and implement an adaptive management plan. If enhancement goals and benchmarks are not being met, the Work Group will identify and implement voluntary actions necessary to meet them when funding is provided.

Changes to Baseline Conditions – Areas Outside of VSP Scope
It's important to note changes to baseline conditions outside of the scope of VSP are likely to occur due to effects from climate change, natural events (e.g., floods, wild fires), the Columbia Basin Project, or other changes outside of the scope of VSP (e.g., land conversions). Additional changes to baseline may occur in the County that are the result of activities outside of the County, such as effects to watercourses that occur upstream and outside of the County limits, GMA-regulated conversions, changes in eligibility for federal programs, changes in federal program funding contract conditions, technical mapping corrections, mapping errors, changes beyond a producer's control, etc.). These changes will not be counted against agriculture for VSP assessment purposes and will be documented through the reporting and adaptive management process.

The adaptive management process is iterative and would repeat cyclically at least every 5 years, as part of the implementation of the VSP. If an adjustment is identified, the Work Group would submit a written report identifying the results of the evaluation and a strategy to make the necessary adjustments to the Work Plan to the Washington State Conservation Commission (WSCC). If an adjustment is not necessary, then the report would simply state the results of the evaluation. In either case, the process of adaptive management would be applied at least every 5 years.

Monitoring and adaptive management is based on two strategies.

1. **Direct monitoring** of producer participation (Table 5-8):
    a. **Conservation acres monitoring**. Direct monitoring of participation in key conservation practices implemented is integral to the outreach strategy. Participation goals were developed based on agricultural activities, critical area functions, and the anticipated effects of implementing specific conservation practices. During outreach and implementation, conservation practices data will be frequently reviewed to determine if participation levels are adequate to meet the goals and benchmarks identified in Sections 5.1 and 5.2.
    b. **Sample verification.** In addition to monitoring conservation practices implemented, FCD will also monitor a randomly selected sample of 10% of the reported projects, including those that are self-reported/funded, to verify the performance of the conservation

practices in terms of implementation/application and maintenance, relying on the CPPE framework. The relative changes in functions affected from a given conservation practice will be tracked in relation to baseline conditions, e.g., a +2 CPPE score for a practice will be captured as a +4 if practices are moving to from a -2 to +2.

c. **Adaptive management trigger.** If at any point after the first year the annual producer participation rate drops below 120% of the annual projected level of conservation practices implemented to meet the protection performance objectives, measures would be taken to address the situation. Participation goals and objectives with potential adaptive management actions are described in Table 5-8. Based on conservation practices data from 2011 to 2016, the level of participation has been far exceeding those necessary to meet the protection performance objectives.

d. **Adaptive management process.** Table 5-9 includes a more detailed description of the adaptive management process for enrollment, including specific thresholds for each of the key practices.

2. **Indirect monitoring** of indicators of critical areas and their functions and values (Table 5-10):

a. **Indicators**. Indicators, identified in Section 5.3, will be used to assess whether the conservation practices implemented under VSP is having the anticipated effect of protecting and/or enhancing critical area functions and values. If goals are met, but indicators show a negative trend in critical area functions and values, it will be important to analyze whether this is related to agriculture and respond accordingly.

b. **VSP applicability.** Some indicators (e.g. stream temperature) may be responding to climactic changes rather than changes in agricultural practices since 2011. If any link to agriculture is determined, additional conservation practices, higher participation goals, or increased outreach may be necessary. Because detection of long-term trends in environmental indicators is difficult, this review will be taken every 5 years as part of the VSP reporting.

c. **Process.** Table 5-10 includes a description of how environmental indicators discussed in Section 5.3 will be used to refine the goals and benchmarks of the VSP over time.

As noted above, indicators data are limited and not always collected in an ideal manner for the direct evaluation of VSP benchmarks and program performance. Where data are limited, adaptive management measures described in this section will be applied as part of implementation to address these data shortfalls where possible within program constraints.

Table 5-8
Producer Participation Goal and Adaptive Management for Low Participation

Participation Goal: Promote producer participation in voluntary stewardship of agricultural lands and critical areas to meet the protection and/or enhancement benchmarks and performance objectives and protect critical areas functions and values at a County-wide watershed level.					
Objectives/Benchmarks	**Performance Metric/Monitoring Method**	**Identified Cause/Adaptive Management Threshold**	**Adaptive Management Action**	**Who Monitors**	**When**
Sufficient active participation by commercial and non-commercial agricultural operators (farmers and ranchers) during 10 years that achieves the protection of critical area functions and values at a County-wide watershed level[1]	• Mapping and aerial photo evaluation and/or rapid watershed assessment of practices in place • Random sampling (10%) of farmers and ranchers in the field by technical assistance providers with willing landowners • Number of acres reported in key conservation practices • Number of VSP self-assessment checklists submitted • Sufficient producer participation necessary to meet protection and/or enhancement benchmarks and performance objectives	Key practice not consistent with agricultural viability	Identify alternative practice that provides similar function and is agriculturally viable	VSP Coordinator	Monitored every year Reported during the 2-year status reports and 5-year performance reports
		Incentives associated with key conservation practice no longer available	Identify alternative funding or alternative practices that are more likely to be self-funded		
		Inadequate reporting of voluntary participation	Increase outreach to producers		
		Change in agricultural practices that make key practices less applicable	Develop applicable practices that provide similar functions		
		Changes in agricultural economy that make self-funded conservation practice implementation difficult	Identify alternative funding or other incentives		
Passive participation by commercial and non-commercial agricultural operators in VSP conservation practices is maintained or increased during 10 years on agricultural land (including those listed in Table 5-6 and Appendix C – Attachment 2)[2]	• Mapping and aerial photo evaluation and/or rapid watershed assessment of practices in place • Random sampling (10%) of farmers and ranchers in the field by technical assistance providers with willing landowners	Enrollment declines below the annual average enrollment rate identified in Table 5-9 in key conservation practices	Increase outreach to producers		
Technical assistance and outreach is provided to agricultural producers to encourage conservation practices and VSP participation	• Number of outreach and education events • Number of event attendees	Enrollment declines below the baseline annual average enrollment rate identified in Table 5-9 in key conservation practices	Increase outreach to producers		

Notes:

1. Active participation includes conservation practices reported either through publicly funded programs or self-reported through the VSP self-assessment checklist in coordination with the VSP Coordinator or technical assistance provider.
2. Passive participation includes un-reported conservation practices.
3. An Outreach Plan is provided in Appendix E.

Table 5-9
Adaptive Management Process for Conservation Practices Participation

Type	Adaptive Management Objective	Protection Metric[1] (Annual)	Verification	Adaptive Management Trigger (120% of Protection Metric) (Annual)	Adaptive Management Action	Who Monitors	When
Residue and Tillage Management	Residue Management – Mulch Till	272 acres	10% verified through monitoring and visual recognition	327 acres	Outreach with producers/review approach	Conservation District	Every year
	Residue and Tillage Management – No-till/ Strip Till/ Direct Seed						
Nutrient Management	Nutrient Management	223 acres	10% verified through monitoring and visual recognition	267 acres	Outreach with producers/review approach	Conservation District	Every year
Pest Management	Pest Management	207 acres	10% verified through monitoring and visual recognition	248 acres	Outreach with producers/review approach	Conservation District	Every year
Water Management	Irrigation Water Management	69 acres	10% verified through monitoring and visual recognition	83 acres	Outreach with producers/review approach	Conservation District	Every year
	Sprinkler Systems/Micro-irrigation						
Livestock Management	Prescribed Grazing	45 acres	10% verified through monitoring and visual recognition	54 acres	Outreach with producers/review approach	Conservation District	Every year
	Heavy Use Area Protection						
	Stock Watering Facilities	0 projects		0 projects			
Soil Management	Cover Crop	3 acres	10% verified through monitoring and visual recognition	4 acres	Outreach with producers/review approach	Conservation District	Every year
	Mulching						
Habitat Management	Conservation Cover	2 acres	10% verified through monitoring and visual recognition	3 acres	Outreach with producers/review approach	Conservation District	Every year
	Critical Area Planting						
	Upland and Wetland Wildlife Habitat Management						
	Restoration and Management of Rare/Declining Habitats						
	Tree/Shrub Preparation and Establishment						
	Fence	148 feet		178 feet			

Note:

1. Metric is calculated based on annual enrollment to meet protection benchmarks and performance objectives.
2. An Outreach Plan is provided in Appendix E.

Table 5-10
Adaptive Management Process for Critical Area Indicators Protection and Enhancement

Indicator Data Source	Adaptive Management Objective	Performance Metric	Monitoring Method	Adaptive Management Action Threshold	Adaptive Management Action	Who Monitors	When[1]	Party Responsible for Action
Ecology water quality stations	Ensure conservation practices employed with the goal of protecting or improving water quality are effective	Change in Category 4 and 5 303(d) listings, focused on parameters that potentially have an agricultural source	Tracking Category 4 and 5 listings through Ecology's 303(d) Water Quality tools	Trends indicating a decrease in baseline water quality due to agriculture	• Determine whether water quality parameters are from agriculture or non-agriculture contributors • Survey with outreach to agricultural producers owners along affected watercourse or waterbody to determine percentage of participation • Identify if participation in conservation practices is supporting goals • Identify conservation practices with Work Group to target for implementation to support goal	Conservation District	Every 2 and 5 years	Conservation District and participating land owners
County or GWMA groundwater quality data	Ensure conservation practices employed with the goal of protecting or improving water quality in CARAs are effective	Change in water quality, focused on parameters that potentially have an agricultural source	Tracking County or Columbia Basin Ground Water Management Area data, if available	Trends indicating a decrease in baseline water quality due to agriculture	• Determine whether water quality parameters are from agriculture or non-agriculture contributors • Survey with outreach to agricultural producers owners along affected CARA to determine percentage of participation • Identify if participation in conservation practices is supporting goals • Identify conservation practices with Work Group to target for implementation to support goal	Conservation District	Every 2 and 5 years	Conservation District and participating land owners
USDA Natural Resources Inventory monitoring result	Ensure conservation practices employed with the goal of maintaining or improving soil functions are effective	Changes in volume of soil and/or overall soil fertility relative to critical areas	Tracking soil data through USDA Natural Resources Inventory monitoring results, tracking sediment parameter within Ecology's 303(d) Water Quality tools	Trends indicating a decrease in baseline soil and/or soil fertility due to agriculture	• Determine whether soil issues are due to agriculture • Survey with outreach to agricultural producers to determine percentage of participation • Identify if participation in conservation practices is supporting goals • Identify conservation practices with Work Group to target for implementation to support goal	Conservation District	Every 2 and 5 years	Conservation District and participating land owners
WDFW Priority Habitats and Species data and GIS aerial imagery evaluations	Ensure conservation practices employed with the goal of protecting or improving habitat are effective	Changes in amount of priority habitats and species, or habitat polygons as evaluated using remote sensing	Tracking priority habitats and species data through the WDFW; tracking changes in habitat quality and extent including shrub-steppe, wetlands and other habitats using aerial imagery (NAIP data, which is expected to be updated every 2 years) and associated GIS methods with some ground-truthing to verify results; evaluating random sample areas (including a representation of lands with conservation practices documented and lands where practices are not documented)	Trends indicating a decrease in baseline terrestrial and/or aquatic habitat due to agriculture[2]	• Determine whether habitat issues are due to agriculture through aerial imagery evaluation and field verification • Survey with outreach to agricultural producers property owners to determine percentage of participation • Identify if participation in conservation practices is supporting goals • Identify conservation practices with Work Group to target for implementation to support goal	Conservation District	Every 2 and 5 years	Conservation District and participating land owners

Notes:

1 Note that timing of data updates by other agencies is out of FCD's control and future updates will be made to reports as new data is available.
2 A 2.5% reduction threshold for shrub-steppe habitat and wetlands in County areas outside of cities and UGAs and with a direct agriculture intersection is defined as a trend that will trigger adaptive management. Other habitats will be evaluated to determine what trends may trigger adaptive management during implementation as needed.
3 An Outreach Plan is included in Appendix E.

Ecology: Washington State Department of Ecology
GIS: Geographic Information System
NAIP: National Agriculture Imagery Program
USDA: U.S. Department of Agriculture
USGS: U.S. Geological Survey
WDFW: Washington Department of Fish and Wildlife

6 Implementation

6.1 Framework for Implementation

Work Plan implementation is expected to continue largely through established programs and organizations. As noted previously, many agricultural-based programs, activities, and efforts are already in place to protect and, in many cases, enhance critical areas and maintain agricultural viability. Significant progress has been made to these ends in recent years for large and small farms throughout the County. This Work Plan has been designed to fit within this existing framework, with supplemental efforts identified to meet state VSP requirements. These requirements include documenting 2011 critical areas baseline conditions, establishing goals and measurable benchmarks, identifying conservation activities, and establishing monitoring and adaptive management measures to track Work Plan performance in protecting critical areas and maintaining agricultural viability. The tracking timeframe for this Work Plan is the first 10 years of implementation and every 5 years through the duration of VSP.

Per RCW 36.70A.705, FCD is responsible for developing the Work Plan and overseeing its implementation, in coordination with the Work Group. Work Plan implementation responsibilities include: agricultural producer participation and outreach; technical assistance; program performance tracking and reporting; and adaptive management. The FCD and others can help in performing these responsibilities. The implementation process will generally follow the steps shown in Figure 6-1.

Figure 6-1
Implementation Process Chart

Ultimately, agricultural producers play the most integral role in VSP 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.

6.2 Agricultural Producers Participation, Technical Assistance, and Outreach

Many producers are already implementing conservation actions throughout the County that are protecting critical areas and supporting agricultural viability, as described in Section 4. Two participation objectives have been established for Franklin County VSP implementation:

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 and the number of practices implemented by agricultural producers. The number of practices to be implemented by producers are reflected in the goals and measurable benchmarks described in Section 5.

Regarding the first objective, it is expected the measures summarized in Section 4 represent only a portion of the total measures implemented during this period. Outreach to individual landowners, as well as to private industry groups, is planned in Years 0 to 2 to better document existing practices and identify future practices that might be implemented outside of government programs. Additional outreach and coordination with the private sector, resulting from the initial outreach activities, is expected to continue through the remaining 8 years of the initial 10-year performance tracking period.

There are roughly 1,100 land owners in Franklin County whose lands intersect with critical areas. FCD will commit to reaching out to 10% of the approximately 700 producers that operate those lands each year using the methods described in the Outreach Plan in Appendix E. As part of the adaptive

management process, this percentage may change based on available funding and resources and/or how the County is progressing toward the goals and benchmarks described in the Work Plan during implementation.

The second participation objective is focused on increasing the number of conservation practices implemented by agricultural producers, helping to meet protection and, where possible, enhancement performance goals outlined in Section 5. Achieving this objective includes offering technical assistance to producers with the development of an Individual Stewardship Plan (ISP), identifying technical assistance and financial incentive programs that further the goals of the Work Plan, and making producers aware of available private- and public-sector financial incentives and programs. This technical assistance would also include helping to estimate the expected benefits that can be realized from implementing the measures identified in ISPs, including agriculture viability benefits at the farm level.

An ISP is defined by the Franklin County VSP Work Group as synonymous with the definition of a "farm plan" as described in RCW 89.08.560. The ISP is a plan prepared by a conservation district in cooperation with a landowner or operator for the purpose of conserving, monitoring, or enhancing renewable natural resources. ISPs can include, but are not limited to, provisions pertaining to:

1. Developing and prioritizing conservation objectives
2. Taking an inventory of and verifying soil, water, vegetation, livestock, and wildlife, including the preparation of a VSP checklist included as an attachment to the ISP identifying potential applicable conservation practices
3. Implementing conservation measures, including technical assistance provided by the conservation district
4. Developing and implementing livestock nutrient management measures
5. Developing and implementing plans pursuant to business and financial objectives

ISPs prepared by FCD must be approved as final by a producer in writing before being determined final and complete. Consistent with RCW 42.56.270, ISPs are not disclosable as publicly available information, unless written approval is provided by a producer. Final ISPs prepared solely by a private sector technical assistance provider for a producer is disclosable to the public if a copy of the ISP is provided to FCD.

Results from these efforts will be tracked and documented, along with documenting any lands converted from conservation practices back to more conventional farming, so the overall net effect on protecting (and where applicable, enhancing) critical areas is characterized.

6.2.1 Organization Leads

The FCD will lead the public-sector program participation efforts, supported by other agencies, such as WSDA, WDFW, Washington State Department of Ecology (Ecology), NRCS, and FSA, and others, with their respective programs and support from the private sector. Local entities will continue to provide technical assistance to producers.

Technical assistance occurs in a variety of ways, including developing individual farm stewardship plans, providing advice on use of specific practices, and sharing information at forums, meetings, and other venues where conservation practices are highlighted for environmental and economic benefits. The FCD will prepare biennial work plans that incorporate public-sector activities to be implemented to achieve VSP outreach, identify technical assistance and conservation practices implementation objectives, and also identify plans for working with the private sector to capture information about practices put in place through its efforts.

Table 6-1 identifies potential VSP outreach strategies, opportunities, and forums.

Table 6-1
VSP Outreach Opportunities

Venue	Description
Tours	• FCD-led annual tours • Legislative and partner agencies outreach tours • On-farm testing/demonstrations • Field trials
Meetings	• FCD monthly board meetings (public meetings; third Tuesday of each month) • Annual regional conservation district meetings • Private-sector agricultural industry-led meetings • Agricultural associations • Local government (city and county) • Irrigation districts • USDA Local Work Group • FSA County Committee
Media	• FCD and private-sector agricultural industry websites, newsletters, and social media sites • Franklin County website • WSCC news and announcement webpage • Articles, announcements, and advertisements with local newspapers and magazines • E-mail distribution lists or postcard notifications • FSA newsletter • Washington State University newsletter

Venue	Description
Others	• Informational booths and displays at fairs and agricultural conventions • Individual outreach, consistent with FCD policies • VSP self-assessment checklist • News releases

Notes:
FSA: Farm Service Agency
USDA: U.S. Department of Agriculture
WSCC: Washington State Conservation Commission

6.3 Monitoring, Reporting, and Adaptive Management

Monitoring performance, reporting progress, and implementing adaptive management measures are part of this Work Plan. Tracking program performance and reporting includes the following tasks:

- **2-year Status Reports.** Conducting a program evaluation and providing a written report on the status of the Work Plan, including accomplishments, to the County and to the WSCC within 60 days (by the end of September) after the end of each biennium. Based on a March 21, 2016, receipt of funding date, 2-year reports are due by end of December in 2018, 2020, 2022, 2024, and 2026, and every 2 years thereafter. Indicator data described in Section 5.3 will also be reviewed to track progress of Work Plan performance in meeting goals and benchmarks.
- **5-year Performance Reports.** Developing and providing to Washington State 5-year progress reports on Work Plan performance in meeting goals and benchmarks. Based on a March 2016 start date, 5-year progress reports would be due in 2021 and 2026, and every 5 years thereafter.

The timelines for this implementation process is shown in Table 6-2.

Table 6-2
Timelines for Implementation Process

Category	Schedule	Roles and Responsibilities
Periodic Evaluations (2-Year Status Reports)	Finalize Work Plan in 2018 (Latest due date is November 24, 2018 due date per WSCC)	Work Group
	2018, 2020, 2022, 2024, 2026, et seq.	Work Group
Report on Goals and Benchmarks (5-Year Performance Reports)	Funding receipt date in 2016	Work Group oversees; FCD prepares report
	2021, 2026, et seq.	
Adaptive Management or Additional Voluntary Actions	Ongoing after 2021	Work Group oversees Work Plan adjustment recommendations to WSCC

Note:
WSCC: Washington State Conservation Commission

The 2-year status and 5-year performance reports would be developed by FCD under the direction of the Work Group. Draft reports would be prepared and presented to the Work Group for review and comment. Comments would be addressed and edits made to the reports, which would then be approved by the Work Group, after they are satisfied that the reports are accurate and complete. Reports would be distributed to the County, WSCC, and others by FCD on behalf of the Work Group. The general timing for reporting will be as follows:

- Monitoring will focus on the measurable benchmarks described in Section 5 and will include periodic evaluations every 2 years.
- The Work Group must report no later than 5 years after receipt of funding (2016 for Franklin County) on whether the protection and enhancement goals have been met.

Work plans often need to adapt to changing conditions and observations of results that are not consistent with established goals as described in RCW 36.70A.720. Adaptive management is the process for, "continually improving management policies and practices by learning from the outcomes of the operational programs" (Nyberg 1999). If the Work Group determines that protection goals and benchmarks have not been met, they must submit and implement an Adaptive Management Plan. If enhancement goals and benchmarks have not been met, the Work Group must identify and implement voluntary actions necessary to meet them when funding is provided. The adaptive management process is outlined in Section 5. Monitoring indicators will inform the long-term viability of the Adaptive Management Plan, based on goals for protecting and enhancing critical area functions and values. Monitoring will focus on the measurable benchmarks and goals also described in Section 5.

6.4 Existing Programs, Plans, and Other Applicable Regulations

The GMA was passed by the Washington State legislature in 1990 to help the state manage development and activities that have the potential to affect sensitive environments and species, including critical areas. The VSP is part of the GMA but was also written to work with other existing programs, plans, and applicable rules and regulations. The following subsections provide a brief overview of the existing resources used in this Work Plan and describe how they relate to other applicable rules and regulations (the regulatory environment).

6.4.1 Existing Public Programs

The existing programs, plans, and guidance documents that were used for this Work Plan are from federal conservation programs, local- and county-based watershed programs, and federal, state, and local planning efforts. These resources have been incorporated into this Work Plan to the maximum extent practical, consistent with the intent of the VSP. There are a variety of conservation programs available to agricultural producers that provide technical assistance and resources for ways to improve the agricultural viability of their land while protecting and enhancing critical areas. Funding

opportunities are also available through these programs for qualifying applicants and projects. Appendix D contains more detail for each program and links to the program's webpages.

Table 6-3 includes a comparison of conservation programs that are currently available. Many of these programs are currently being implemented in Franklin County and are incorporated into the goals, benchmarks, and adaptive management strategies included in Section 5. For example, some of the benchmarks are based on reported projects being implemented under these programs.

Table 6-3
Public Sector Conservation Programs Summary

Lead	Description	Technical Assistance	Financial Assistance	Partnership Agreements	Contractor Easement
Natural Resources Conservation Service (NRCS)	NRCS provides technical and financial assistance to help agricultural producers make and maintain conservation improvements on their land. NRCS also offers conservation easement programs and partnerships to leverage existing conservation efforts on farm lands.	●	●	●	●
Farm Service Agency (FSA)	FSA oversees several voluntary, conservation-related programs that work to address several agriculture-related conservation measures, including programs such as CRP and CREP.		●		●
Washington State Conservation Commission (WSCC)	WSCC works with conservation districts to provide voluntary, incentive-based programs for implementation of conservation practices. WSCC supports the conservation districts through financial and technical assistance; administrative and operational oversight; program coordination; and promotion of conservation districts activities and services.		●	●	●
Washington State Department of Fish and Wildlife (WDFW)	WDFW provides financial assistance for habitat projects that restore and/or preserve fish and wildlife habitat through funding opportunities such as the ALEA Volunteer Cooperative Grant Program.	●	●	●	
Washington State Recreation and Conservation Office	The Washington State Recreation and Conservation Office provides funding to protect aquatic lands and for projects aimed at achieving overall salmon recovery, including habitat projects and other activities that result in sustainable and measurable benefits for salmon and other fish species. Funding is provided through programs such as ALEA and Salmon Recovery Funding Board Grant Program.		●		●

Lead	Description	Technical Assistance	Financial Assistance	Partnership Agreements	Contractor Easement
Washington State Department of Ecology (Ecology)	Ecology provides funding for water-quality improvement and protection projects, including programs such as the Water Quality Financial Assistance program and voluntary partnership programs such as the Farmed Smart Partnership.		●	●	
FCD	FCD works through voluntary, incentive-based programs to assist landowners and agricultural operators with the conservation of natural resources throughout the conservation districts, including a variety of cost-share and technical assistance programs.	●	●	●	

Notes:
ALEA: Aquatic Lands Enhancement Account
CREP: Conservation Reserve Enhancement Program
CRP: Conservation Reserve Program

6.4.2 Private-sector and Not-for-profit Programs

Private-sector services and programs are available through existing agri-businesses and associations serving the County such as food-processing companies, certified crop consultants, and agri-businesses providing soil services, and integrated water, and pest and nutrient management services.

6.4.3 Existing Plans and Guidance

Available plans and guidance were referenced for developing the goals and benchmarks in this Work Plan and were obtained from existing federal, state, and local sources, including water quality improvement projects, salmon recovery plans, groundwater recovery plans, and shrub-steppe restoration guidelines. Existing plan and guidance documents used for this Work Plan are listed in Appendix D.

Ecology has been developing strategies to protect water quality and improve working relationships with agricultural landowners and livestock producers. Programs, such as the Farmed Smart Partnership, allow farms that achieve and maintain certification by a third-party examiner safe harbor from Ecology's water pollution regulations for practices related to dryland crop farming. Ecology has also established a new Agriculture and Water Quality Advisory Committee comprising a broad array of agricultural participants. The new committee aims to provide an open forum for dialogue regarding water quality protection and a healthy agricultural industry.

6.4.4 Regulatory Environment

Even though the VSP is carried out under the GMA, other rules and regulations still apply for agricultural activities that have the potential to impact critical areas. Existing federal and state rules and regulations will still apply to agricultural activities that have the potential to affect the environment, including the federal Clean Air Act, Clean Water Act, and ESA. Other state and local environmental regulations, such as the Washington State Hydraulic Code, may also apply to agricultural activities with the potential to affect the environment. Figure 6-2 is intended to show how the VSP relates to other rules and regulations that apply separately from critical areas protection under the GMA.

Figure 6-2
Voluntary Stewardship Program Regulatory Underpinning

7 References

Anchor QEA (Anchor QEA, LLC), 2014. *Franklin County Shoreline Master Program Update: Final Draft Shoreline Inventory, Analysis, and Characterization Report*. December 2014.

Anchor QEA, 2016. *Final Draft Shoreline Master Program: Franklin County Shoreline Master Program Update*. Prepared for Franklin County. February 2016.

Bailie, B., 2017. Personal communication with Josh Jensen, Anchor QEA, via telephone. February 22, 2017.

Cochrane, B., 2017. Personal communication with Josh Jensen, Anchor QEA, via telephone. February 9, 2017.

Drost, B.W., S.E. Cox, and K.M. Schurr, 1997. Changes in Ground-water Levels and Ground-water Budgets, from Predevelopment to 1986, in Parts of the Pasco Basin, Washington. Prepared for the U.S. Geological Survey. Tacoma, Washington.

Ecology (Washington State Department of Ecology), 2010. Focus on Irrigation-Influenced Wetlands. Ecology Publication Number: 10-06-015. July 2010.

Ecology, 2016. Washington State Water Quality Assessment 303(d)/305(b) List Search Tool. Cited: February 27, 2017. Available from: https://fortress.wa.gov/ecy/approvedwqa/ApprovedSearch.aspx.

FCD (Franklin Conservation District), 2015. Franklin Conservation District 5-Year Strategic Plan (2015-2020).

FCD, 2017. Franklin Conservation District FY2018 (7/1/17-6/30/18) Annual Work Plan.

Franklin County, 2011. *Franklin County Hazard Mitigation Plan*. Prepared by Franklin County Emergency Management.

GWMA (Ground Water Management Area), 2001. Columbia Basin Ground Water Management Area of Adams, Franklin and Grant Counties, Washington: Ground Water Management Area Plan. Othello, Washington.

Lindsey, K., 2017. *Final Technical Memorandum on Franklin County CARA and VSP*. Prepared by Kevin Lindsey, EA Engineering, Science, and Technology, Inc., PBC, to Ben Floyd, Anchor QEA. March 14, 2017.

NRCS (Natural Resources Conservation Service), 2015. Wind Erosion Potential Data.

NRCS, 2017. NRCS Conservation Practice Physical Effects CPPE/NRCS Economics. Cited March 2017. Available from: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/econ/data/?cid=nrcs143009740

Nyberg, J.B., 1999. *An Introductory Guide to Adaptive Management for Project Leaders and Participants*. British Columbia Forest Service, Victoria, Canada. January 1999.

Pacific Northwest Direct Seed Association, 2017. *Farmed Smart Review*. Presentation. Presented by Kay Meyer, Executive Director of the Pacific Northwest Direct Seed Association.

Reclamation (Bureau of Reclamation), 2016. Columbia Basin Project – Project History. Updated: December 12, 2016. Cited: January 4, 2017. Available from: https://www.usbr.gov/pn/grandcoulee/cbp/.

Schultz, R., and R. Vancil, 2016. Voluntary Stewardship Program – An Alternative Approach for Protecting Critical Areas on Agricultural Lands While Maintaining the Viability of Agriculture. *Environmental Land Use Law* 42(1):9-15.

USDA (U.S. Department of Agriculture), 2006. Soil Survey of Franklin County, Washington. Prepared by Edward A. Brincken with the Soil Conservation Service. Available from: https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/washington/WA021/0/franklin.pdf

USDA, 2011. USDA-NASS (National Agricultural Statistics Service) Cropland Data Layer 2011. Available from: https://www.nass.usda.gov/Research_and_Science/Cropland/Release/index.php

USDA, 2012. 2012 Census of Agriculture: County Profile – Franklin County Washington. Available from: https://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/Washington.

USDA, 2016. Conservation Reserve Program Statistics. Available from: https://www.fsa.usda.gov/programs-and-services/conservation-programs/reports-and-statistics/conservation-reserve-program-statistics/index

WDFW (Washington Department of Fish and Wildlife), 1997. Management Recommendations for Washington's Priority Habitats: Riparian.

WDFW, 2011. Management Recommendations for Washington's Priority Habitats: Managing Shrub-steppe in Developing Landscapes.

WDFW, 2017. Species & Ecosystem Science, Shrub steppe Ecology. Accessed: January 12, 2017. Available from: http://wdfw.wa.gov/conservation/research/projects/shrubsteppe/.

Weibull, A., Ö. Östman, and Å. Granqvist, 2003. Species richness in agroecosystems: the effect of landscape, habitat and farm management. *Biodiversity and Conservation* 12(7):1335-1355.

Wieseler, M., 2017. Personal communication with Josh Jensen, Anchor QEA, via telephone. February 14, 2017.

WSDA (Washington State Department of Agriculture), 2011. WSDA Crop Data Layer 2011.

WSDA, 2015. Agricultural Landcover Data. WSDA Crop Data Layer 2015.

Attachment 1
Franklin County Voluntary Stewardship Program Overview and Checklist

Franklin County
Voluntary Stewardship Program Overview and Checklist

Name: _____

Address: _____

E-mail: _____

Working together, farmers can use voluntary efforts to avoid additional regulatory controls. The Voluntary Stewardship Program (VSP) is a new, non-regulatory, and incentive-based approach that supports individual farm operations and viability while protecting critical areas and maintaining agriculture viability in Franklin County through **voluntary stewardship strategies and practices**. Participation in VSP is an opportunity for agricultural producers to showcase sustainable practices and stewardship of the land.

How can the VSP support operations on your farm?

VSP allows farmers to have more flexibility than Franklin County's traditional critical area regulations by promoting tailored stewardship strategies and practices to individual farms to protect critical areas and maintain and enhance agricultural viability.

This VSP checklist is intended to help each farmer contribute to the goals and benchmarks of the Franklin County VSP Work Plan. Many farmers in the County are already implementing stewardship strategies and conservation practices that promote farm viability while also providing protections to critical area functions. **Working together, farmers can use volunteer efforts to avoid additional regulatory controls.**

Balanced Approach of Critical Area Protection and Agricultural Viability

VSP Checklist

The VSP Checklist has the following main objectives:

- Identify and document existing stewardship strategies or conservation practices you have implemented since 2011 (effective date of VSP), either through existing publicly funded programs or voluntarily implemented through producer-funded practices.
- Identify opportunities to:
  - Maintain or improve existing stewardship strategies and conservation practices.
  - Implement additional stewardship strategies and conservation practices on your land and connect you with technical service providers for implementing these practices.
- Encourage high producer participation, through implementation of voluntary stewardship strategies and conservation practices, to help ensure the success of VSP. **Failure of the County to meet protection and associated participation goals will trigger the traditional regulatory approach to critical area protection under the County's Critical Areas Ordinance process.**

What are critical areas?

Critical areas include:

- Wetlands
- Fish and Wildlife Habitat Conservation Areas
- Critical Aquifer Recharge Areas
- Geologically Hazardous Areas
- Frequently Flooded Areas

Conservation Practices on Your Farm

A conservation practice is broadly defined as any practice, that when implemented, further protects critical areas directly or indirectly, and maintains or improves agricultural viability whether or not it meets a Natural Resources Conservation Service conservation practice or other standard.

This checklist can assist in documenting all stewardship strategies and conservation practices currently being implemented by producers in the County and identify additional conservation practices that might apply to your property. Because stewardship strategies and conservation practices may fall under multiple categories, please include each implemented practice **only once**.

Disclaimer:

Stewardship strategies and voluntary conservation plans documented through a local government agency, such as the Conservation Districts, are generally exempt from disclosure under the state Public Records Act. Note that cost-shared practices are not exempt. The VSP Work Group requires some level of substantive information to be able to monitor ongoing program effectiveness in meeting VSP requirements and goals and benchmarks, and to support the Work Group's finding that aggregate baseline critical area conditions are being protected.

Information collected by producers using this checklist will be used to quantify, at the County-level, stewardship measures that have been implemented, as well as associated critical area protections and enhancements, and agricultural viability benefits.

General Location (voluntary information):

If you are inclined to share, what area is your farm located within?

- ☐ **Dryland**
- ☐ **Irrigated**
- ☐ **Rangeland**

Land Management and Agricultural Viability:

What types of land management or agricultural viability concerns do you have on your property?

- ☐ Soil composition (organic matter)
- ☐ Soil loss (erosion)
- ☐ Water quantity/quality
- ☐ Moisture management
- ☐ Weed management
- ☐ Pollinator/beneficial organism management
- ☐ Yield/fertility
- ☐ Reduce inputs (e.g., pesticides or fertilizers)
- ☐ Other(s) please list: _____
  _____

Erosion

Residue- and till-management strategies are applied by producers in the County to reduce erosion caused by tillage and manage soil moisture content.

Sprinkler Efficiency

Sprinkler efficiency practices, such as the conversion from rill irrigation to sprinkler irrigation, help to reduce irrigation-induced erosion for irrigated agriculture purposes but can have indirect effects to wetlands.

What conservation practices are being implemented on your farm?

Stewardship Strategies and Conservation Practice Examples	I do this	I'm interested in this	Does not apply	Not interested	Average units/year (acres/feet/ percentage)
Residue and Tillage Management					
Mulch Till	○	○	○	○	
Reduced Till	○	○	○	○	
No Till/Direct Seed	○	○	○	○	
Other(s): _____	○	○	○	○	
Chemical and Nutrient Management					
Pest Management	○	○	○	○	
Nutrient Management	○	○	○	○	
Other(s): _____	○	○	○	○	
Water and Filtration Management					
Filter Strips	○	○	○	○	
Sprinkler Systems Upgrades	○	○	○	○	
Irrigation Water Management	○	○	○	○	
Pumping Plants	○	○	○	○	
Other(s): _____	○	○	○	○	
Range/Pasture Management					
Prescribed Grazing	○	○	○	○	
Range Planting	○	○	○	○	
Stock Watering Facilities/Wells	○	○	○	○	
Fencing	○	○	○	○	
Other(s): _____	○	○	○	○	
Soil Management					
Conservation Crop Rotation	○	○	○	○	
Cover Crop	○	○	○	○	
Mulch	○	○	○	○	
Critical Area Planting	○	○	○	○	
Other(s): _____	○	○	○	○	
Habitat Management					
Conservation Cover	○	○	○	○	
Herbaceous Weed Control	○	○	○	○	
Tree/Shrub Establishment	○	○	○	○	
Other(s): _____	○	○	○	○	

Additional Information and Assistance

Critical areas exist throughout the County. You can direct questions about the presence of critical areas on your property to the Franklin County VSP Coordinator by using the contact information below.

You can also visit http://franklingis.org/franklingis/maps/39665/Planning for critical area maps for Franklin County.

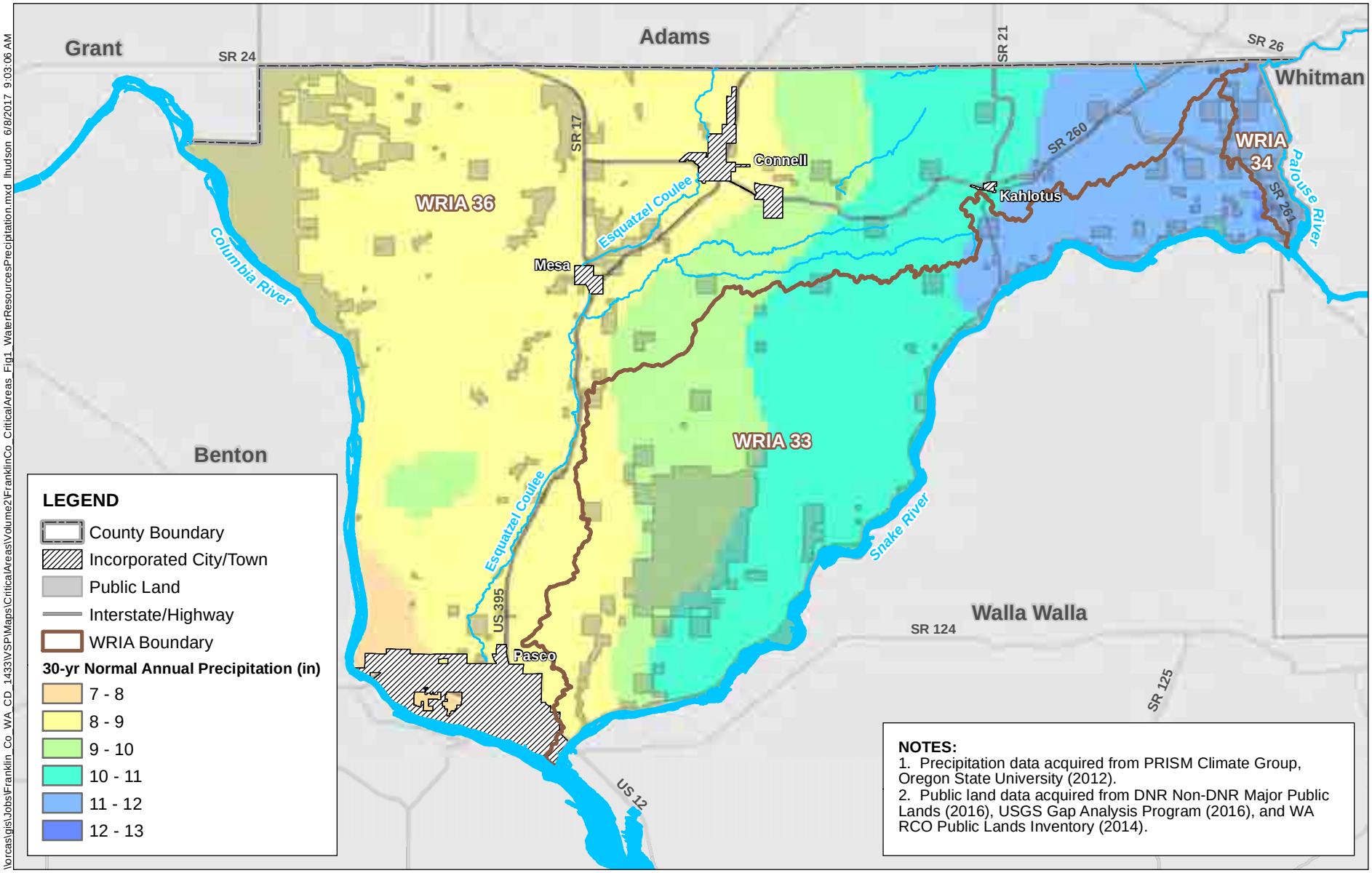
Franklin County VSP Coordinator Provider:

Franklin Conservation District	
Mark Nielson (District Manager) Franklin Conservation District 1724 East Superior Pasco, WA 99301 509-416-0440 Ext. 101 Mark-nielson@conservewa.net https://www.franklincd.org/	Heather Wendt (Assistant Manager) Franklin Conservation District 1724 East Superior Pasco, WA 99301 509-430-3693 Heather-wendt@conservewa.net https://www.franklincd.org/

Other Local Resources:

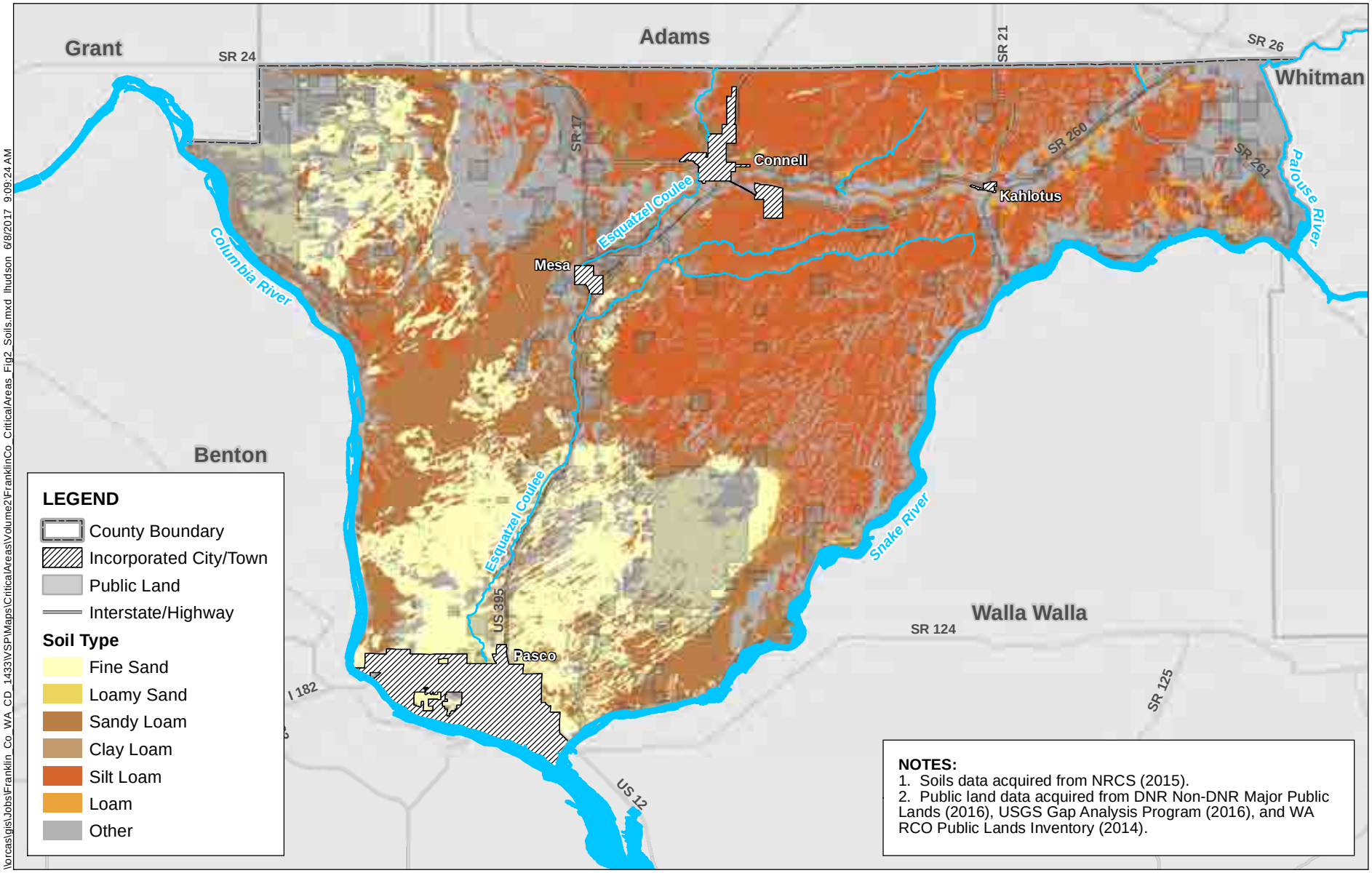
- Washington Cattlemen's Association: http://www.washingtoncattlemen.org/
- Franklin County Farm Bureau: http://wsfb.com/franklin-county-farm-bureau/
- Washington Association of Wheat Growers: http://www.wawg.org/
- USDA Natural Resources Conservation Service: https://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/
- Washington State University Extension: http://extension.wsu.edu/

Appendix A
VSP Map Folio



ANCHOR QEA

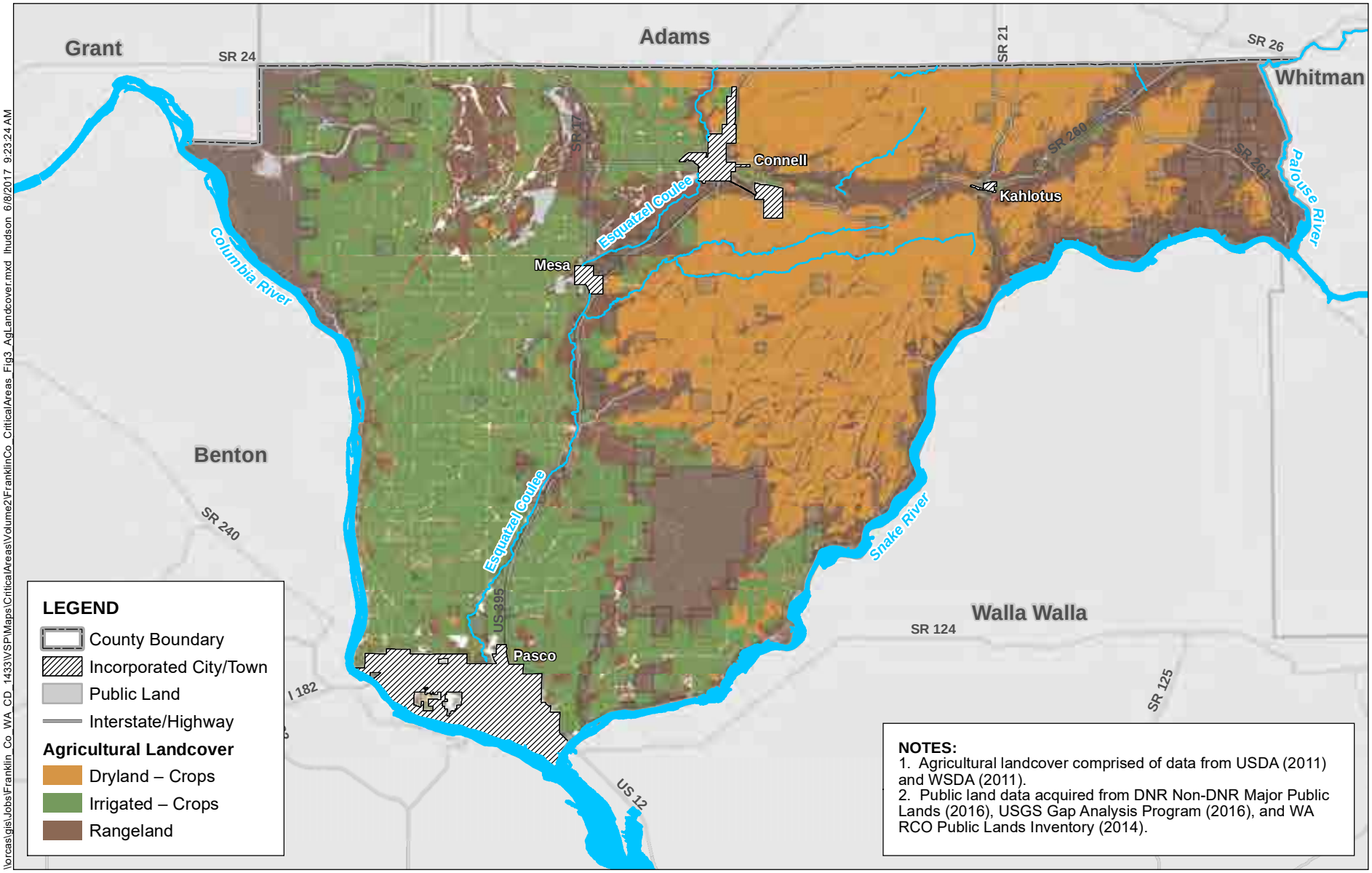
Figure 1
Water Resources and Precipitation Map
Voluntary Stewardship Program
Franklin County, WA



\\orcas\gis\Jobs\Franklin_Co_WA_CD_1433\VSP\Maps\CriticalAreas\Volume2\FranklinCo_CriticalAreas_Fig2_Soils.mxd lhudson 6/8/2017 9:09:24 AM

ANCHOR QEA

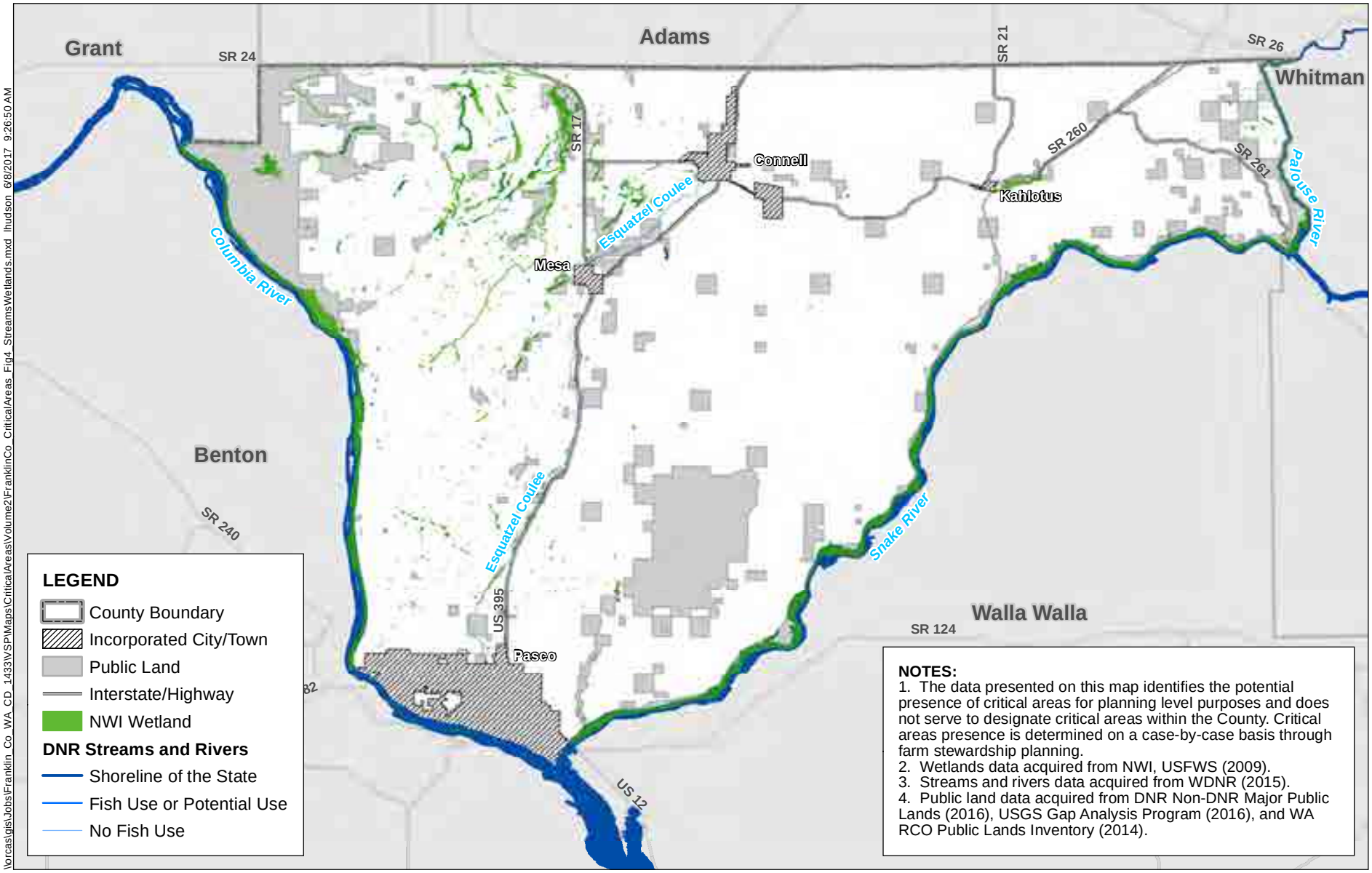
Figure 2
Soils Map
Voluntary Stewardship Program
Franklin County, WA



\\orcas\gis\Jobs\Franklin_Co_WA_CD_1433\VSP\Maps\CriticalAreasVolume2\FranklinCo_CriticalAreas_Fig3_AgLandcover.mxd lhudson 6/8/2017 9:23:24 AM

ANCHOR QEA

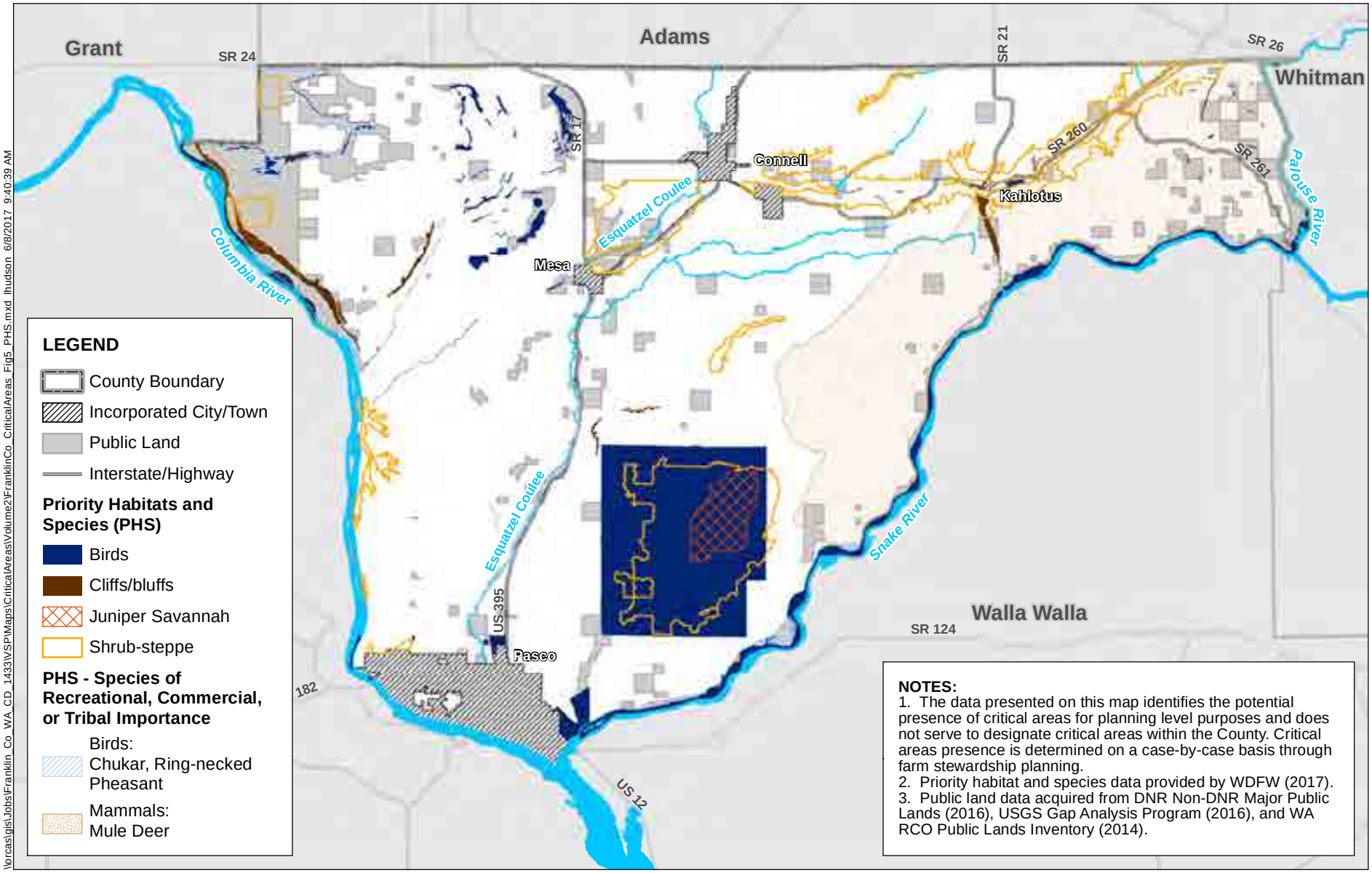
Figure 3
Agricultural Landcover Map
Voluntary Stewardship Program
Franklin County, WA



\\orcas\gis\Jobs\Franklin_Co_WA_CD_1433\VSP\Maps\CriticalAreasVolume2\FranklinCo_CriticalAreas_Fig4_StreamsWetlands.mxd lhudson 6/8/2017 9:26:50 AM

ANCHOR QEA

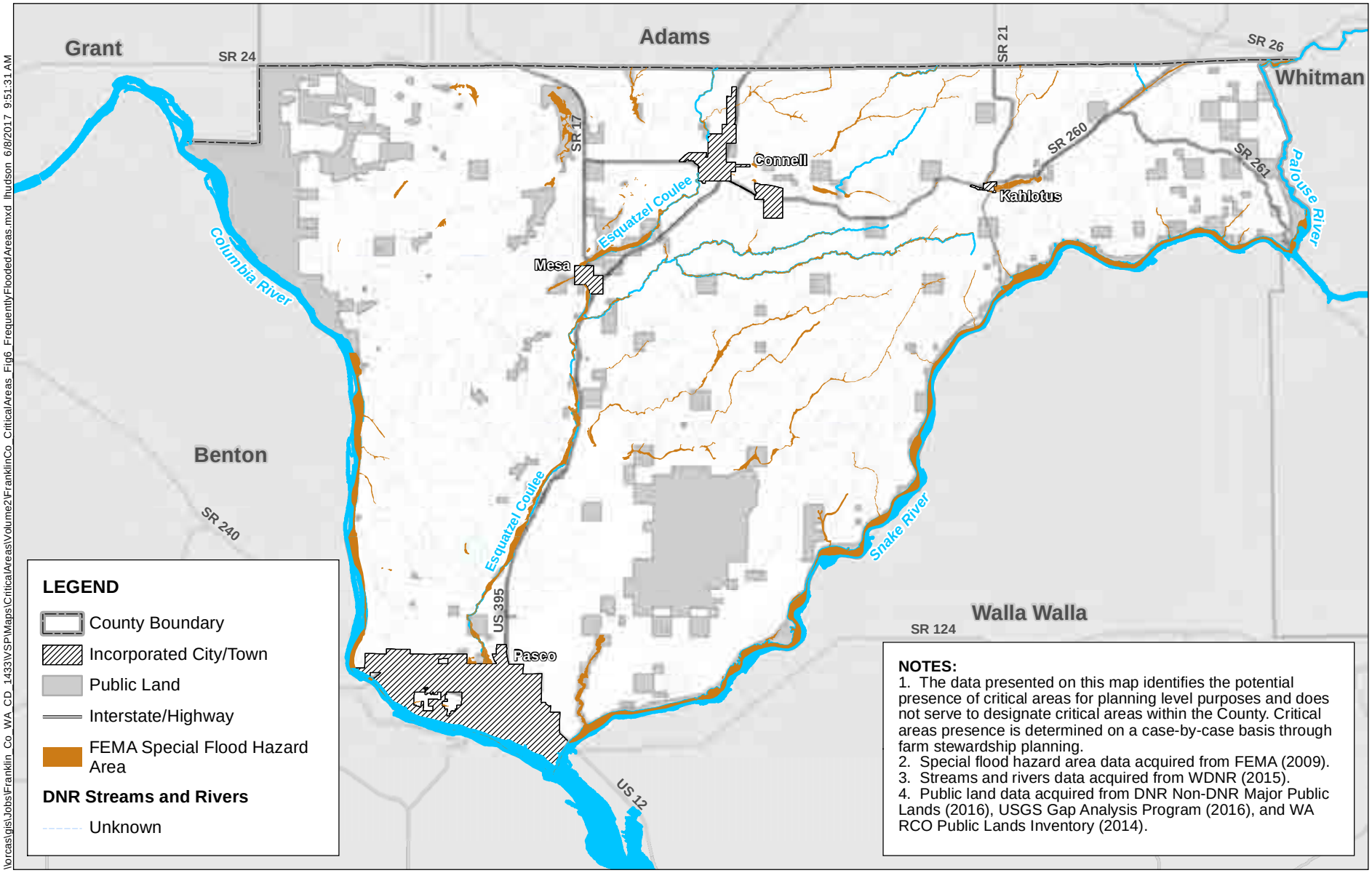
Figure 4
Streams and Wetlands Map
Voluntary Stewardship Program
Franklin County, WA



\\orcas\gis\Jobs\Franklin_Co_WA_CD_1433\VSP\Maps\CriticalAreasVolume2\FranklinCo_CriticalAreas_Fig5_PHS.mxd lhudson 6/8/2017 9:40:39 AM

ANCHOR QEA

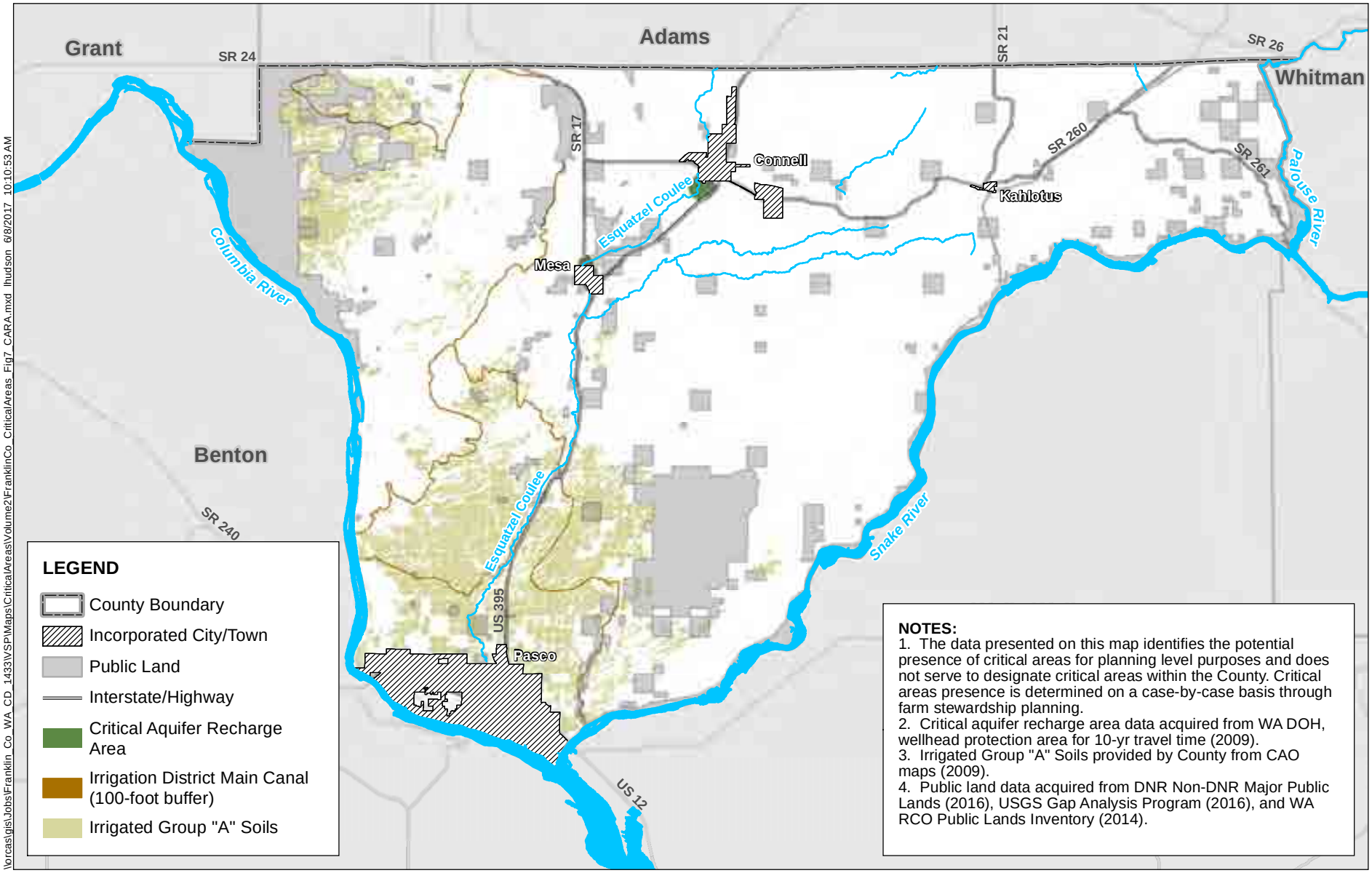
Figure 5
Priority Habitat and Species Map
Voluntary Stewardship Program
Franklin County, WA



\\orcas\gis\Jobs\Franklin_Co_WA_CD_1433\VSP\Maps\CriticalAreasVolume2\FranklinCo_CriticalAreas_Fig6_FrequentlyFloodedAreas.mxd lhudson 6/8/2017 9:51:31 AM

ANCHOR QEA

Figure 6
Frequently Flooded Areas Map
Voluntary Stewardship Program
Franklin County, WA



\\orcas\gis\Jobs\Franklin_Co_WA_CD_1433\VSP\Maps\CriticalAreasVolume2\FranklinCo_CriticalAreas_Fig7_CARA.mxd lhudson 6/8/2017 10:10:53 AM

ANCHOR QEA

Figure 7
Critical Aquifer Recharge Areas Map
Voluntary Stewardship Program
Franklin County, WA

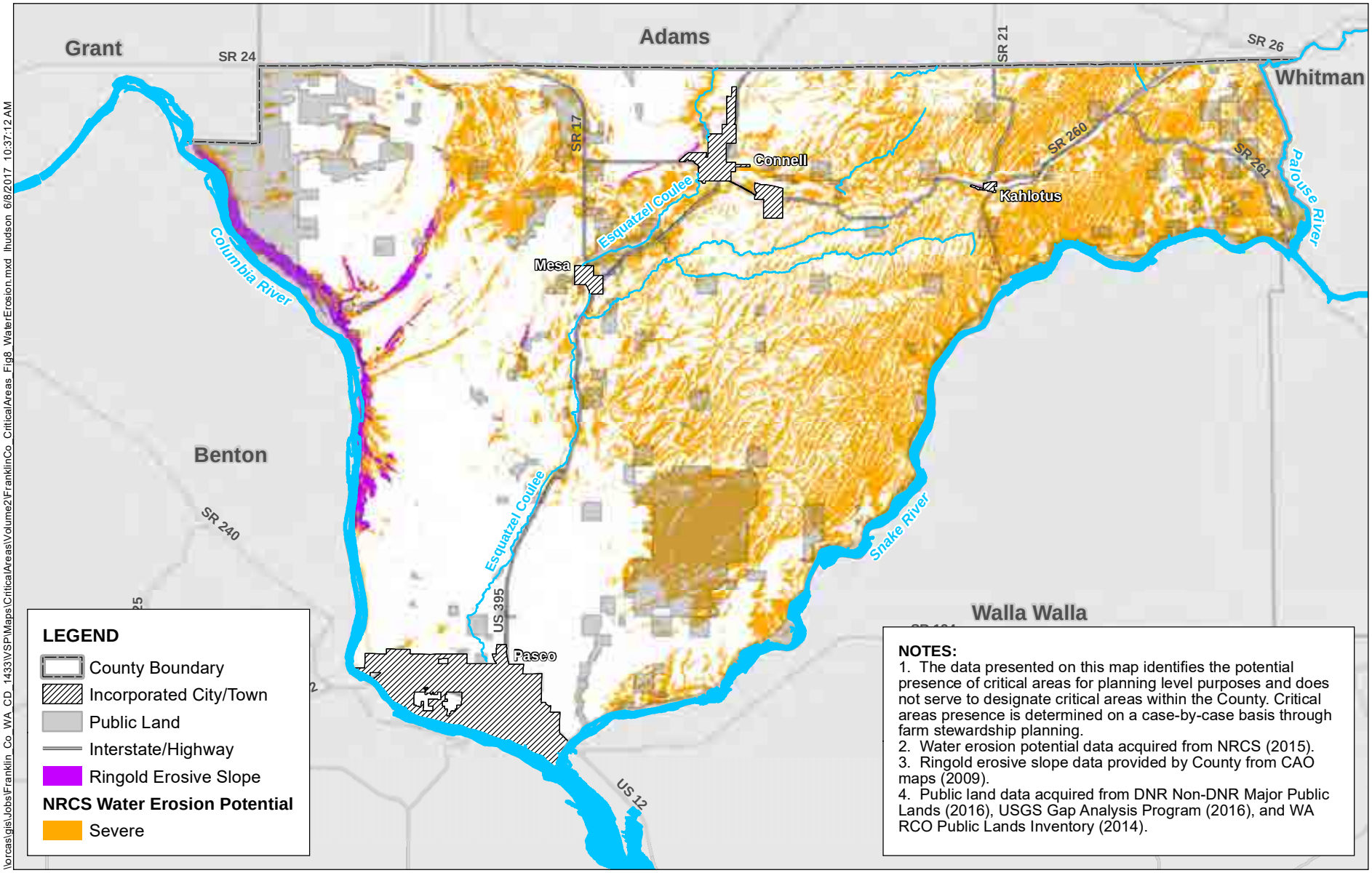
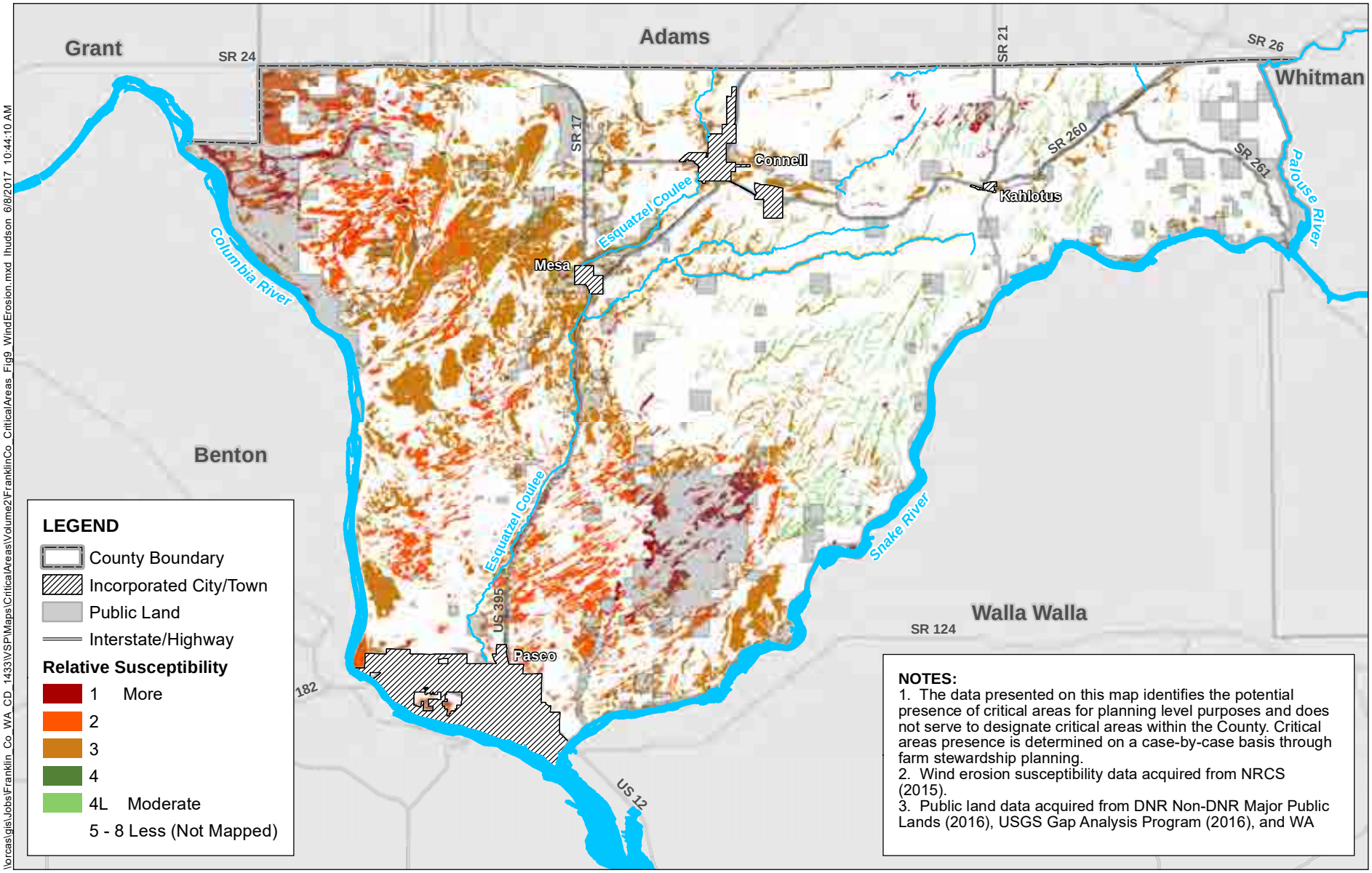


Figure 8
Geologic Hazard Areas – Water Erosion Potential Map
Voluntary Stewardship Program
Franklin County, WA



\\orcas\gis\Jobs\Franklin_Co_WA_CD_1433\VSP\Maps\CriticalAreasVolume2\FranklinCo_CriticalAreas_Fig9_WindErosion.mxd lhudson 6/8/2017 10:44:10 AM

ANCHOR QEA

Figure 9
Geologic Hazard Areas – Wind Erosion Susceptibility Map
Voluntary Stewardship Program
Franklin County, WA

Appendix B
Baseline Conditions Summary

- B-1: Baseline Conditions Summary Methods and Data Sources
- B-2: County-Wide Analysis
- B-3: Franklin County Critical Areas Ordinance Designations and Definitions
- B-4: Agricultural Viability Interview Summary
- B-5: Franklin County Water Quality 303(d) Listings (2016)
- B-6: Franklin County Critical Aquifer Recharge Area and VSP

Appendix B-1
Baseline Conditions Summary Method and Data Sources

Appendix B-1: Baseline Conditions Summary Method and Data Sources

Overview

The effective date of the Voluntary Stewardship Program (VSP) legislation is July 22, 2011. This is also the date chosen by the legislature as the applicable baseline for accomplishing the following items (Revised Code of Washington [RCW] 36.70A.703):

- Protecting critical areas functions and values.
- Providing incentive-based voluntary enhancements to critical areas functions and values.
- Maintaining and enhancing the viability of agriculture in the County.

The 2011 baseline sets the conditions from which the County will measure progress in implementing the Franklin County VSP Work Plan (Work Plan) and meeting measurable benchmarks. Measurable benchmarks are a required Work Plan element under VSP (RCW 36.70A.720 (1)(E)) and provided in the Work Plan, Section 5: Goals, Benchmarks, and Adaptive Management.

The methods and data sources relied on to establish 2011 baseline conditions for the County's five critical areas and agricultural activities are described in the following sections.

Methods for Establishing Baseline Conditions

The 2011 baseline conditions summary includes an inventory of agriculture landcover and critical area resources. The following methods were applied in the baseline conditions inventory (see Table 1 for a complete list of data sources):

- **Agricultural landcover assessment** was primarily based on:
  - Washington State Department of Agriculture (WSDA) 2011 agricultural landcover data for croplands (irrigated and dryland agriculture). U.S. Department of Agriculture (USDA) 2011 agricultural landcover data were primarily relied on for additional data on rangelands. Three major agricultural land categories were characterized within the County: 1) irrigated; 2) dryland; and 3) rangeland. These categories are associated with different crops, agricultural activities, stewardship practices, and intersections with critical areas.
- **Critical areas assessment** was based on:
  - Critical areas designations included in the County's Critical Areas Ordinance (CAO) (see Appendix B-3 for CAO summary).
  - Data sources for planning-level critical areas mapping (Appendix A: Map Folio) and critical area/agricultural intersections summaries (Appendix B-4: Baseline Conditions Critical Areas Data Summary Tables) ranged from 2009 to 2016 and included data from

the County's CAO, updated in 2009 and amended in 2012. See Table 1 for a complete list of data sources.

- **Privately owned lands** were used to:
  - Assess critical area intersections with agricultural lands. The VSP does not apply to agricultural activities occurring on public lands through leases or other agreements.
- **Data sources and the VSP Map Folio (Appendix A)** were used to:
  - Assess the potential presence of critical areas within the County and intersection with agricultural lands were used for planning-level purposes only. Actual critical areas presence is determined on a case-by-case basis through farm stewardship planning.

Data Sources

The data sources listed in Table 1 were used in the baseline conditions inventory, to assess the conditions as close to the 2011 baseline as data availability allowed.

Table 1
2011 Baseline Conditions Data Sources

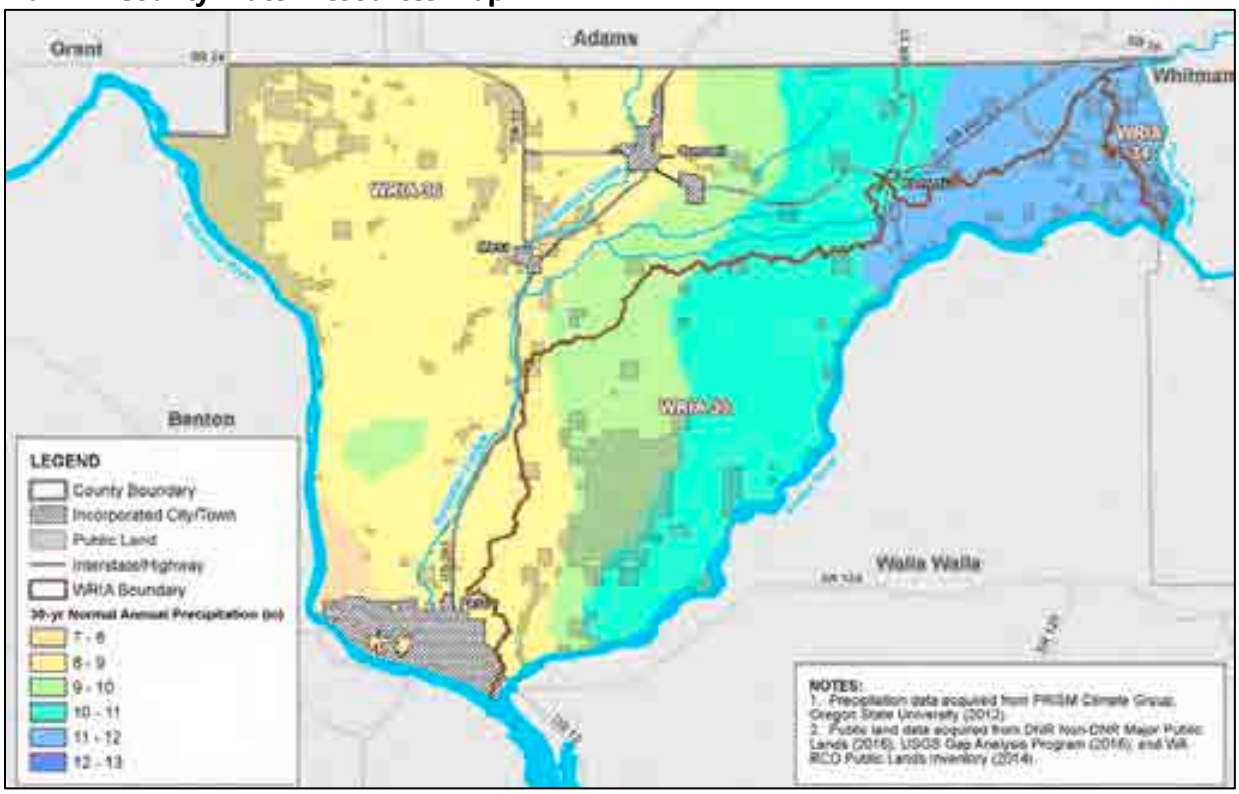
Title	Year	Author
PRISM Climate Group Precipitation Data	2012	Oregon State University
USDA Agricultural Landcover	2011	United States Department of Agriculture
WSDA Agricultural Landcover	2011	Washington State Department of Agriculture
National Wetland Inventory Data	2009	Franklin County
Streams and Rivers Data	2015	Washington State Department of Natural Resources
Priority Habitat and Species Data	2017	Washington State Department of Fish and Wildlife
Wellhead Protection Area	2009	Franklin County
Water Erosion Potential	2015	Natural Resources Conservation Service
Wind Erosion Susceptibility	2015	Natural Resources Conservation Service
Irrigated Group 'A' Soils	2009	Franklin County
Ringold Erosive Soils	2009	Franklin County
Landslide Areas	2009	Franklin County
Slopes	2009	Franklin County
Special Flood Hazard Areas	2009	Franklin County
Hydraulic Unit Code (HUC) 10 data	2013	Bureau of Land Management
Watershed Resource Inventory Area (WRIA)	2000	Washington State Department of Ecology
Public Lands (Gap Analysis Program)	2016	United States Geological Survey
Public Lands (Public Lands Inventory)	2014	Washington State Recreation and Conservation Office
Public Lands (Non-DNR Major Public Lands)	2016	Washington State Department of Natural Resources

Appendix B-2
County-wide Analysis

Appendix B-2: County-wide Analysis

Franklin County includes portions of three watersheds, which are known as Water Resource Inventory Areas (WRIAs). As shown in Figure 1, most of the County is in the Esquatzel Coulee (WRIA 36). The eastern portion of the County is in the Lower Snake (WRIA 33), and a small part of the northeastern portion of the County is in the Palouse (WRIA 34).

Figure 1
Franklin County Water Resources Map



The following includes an analysis of Franklin County and its watershed characteristics.

Profile

Water Resources

Franklin County is bordered by the Columbia River to the west and the Snake and Palouse Rivers to the east. Most waterbodies in Franklin County are related to the Columbia Basin Project (CBP), including the Esquatzel Coulee and wasteway, which run through the middle of the county. Other features primarily include water conveyance facilities located throughout the county and seasonal streams that are tributary to the Columbia, Snake, or Palouse rivers. Precipitation in the county ranges from 7 to 8 inches in the southwestern region to up to 13 inches in some parts of the eastern region. Groundwater supplies are concentrated in the western half of the county and located in unconfined and semi-confined coarse grained (sand and gravel) and fine grained (silt and clay) alluvial sediments and shallow semi-confined to confined basalt aquifers (Lindsey and Newman 2017). Franklin County is located within the Columbia Basin Ground Water Management Area; the main goal of this area is to protect groundwater and address groundwater issues, including declining supply and groundwater quality.

Soils and Terrain

Franklin County is located in the eastern part of the Pasco Basin and the low-point of the Columbia River Basalt Plateau (Brincken 2006). Soils in the area are characterized by fine sand and sandy loam to the west and silt loam to the east. The Ringold formation sediments are located to the west adjacent to the Columbia River. The majority of soils in this area are used for irrigated and dryland agricultural practices.

Agricultural Landcover and Primary Crops/Products

Approximately 82% of Franklin County is within agricultural landcover (private lands), primarily comprising irrigated and dryland. Major dryland crops in the county include wheat and barley, and irrigated crops include wheat, peas, beans, alfalfa, field corn, potatoes, and sweet corn (Brincken 2006). Specialty crops are also featured in the county and include apples, grapes, and asparagus (Brincken 2006).

Landcover	Acres	Percent
Total Community Area	**779,506**	**NA**
Agricultural Landcover	**635,719**	**82%**
Irrigated	228,698	36%
Dryland	238,670	38%
Range	168,351	26%

Location of Critical Areas

Fish and Wildlife Habitat Conservation Areas (HCAs) are mapped as Priority Habitat and Species (PHS) within the county. Approximately 10% of private agricultural lands include mapped non-game species PHS areas and approximately 20% include game species PHS areas which are described below:

- Shrub-steppe PHS habitat occurs on 41,854 acres of agricultural lands.
- Ferruginous hawk PHS habitat occurs on 24,577 acres of agricultural lands.
- Game species PHS habitat, primarily mule deer and ring-necked pheasant, occurs on 127,782 acres of agricultural lands.

Water Erosion Areas have a large intersect with agricultural lands within the county (33%). The east side of the county is characterized with soils having severe water erosion potential. This is likely due to the low annual precipitation and silty soils on this side of the county. The Ringold formation sediments located on the west side of the county adjacent to the Columbia River are also highly erosive.

Critical Aquifer Recharge Areas are most concentrated on the west side of the county. These aquifers commonly occur in fine-grained and coarse-grained soils along the Columbia River (Lindsey and Newman 2017). Critical aquifer recharge areas on the east side of the county are located in coarse grain soils located in channeled scabland coulees including Kahlotus, Washtucna, and Esquatzel coulees.

Other Critical Areas such as wetlands and frequently flooded areas have limited intersections with agriculture in the county.

Critical Areas	Areas within Agricultural Lands[1]							
	Irrigated		Dryland		Rangeland		Total	
	Acres	*Percent*	*Acres*	*Percent*	*Acres*	*Percent*	*Acres*	*Percent*
Wetlands	286	<1%	503	<1%	1,205	<1%	1,993	<1%
HCAs – Non-game Species	12,518	2%	5,093	1%	46,341	7%	63,951	10%
HCAs – Game Species	723	<1%	72,202	11%	54,857	9%	127,782	20%
CARAs	80,250	13%	2,198	<1%	2,546	<1%	84,994	13%
Geologically Hazardous Areas[2]	15,770	2%	92,151	14%	98,789	16%	206,710	33%
Frequently Flooded Areas	1,149	<1%	3,233	1%	5,142	1%	9,524	1%

Notes:
CARAs: Critical Aquifer Recharge Areas
HCAs: Fish and Wildlife Habitat Conservation Areas

1. Agricultural areas included in this summary are limited to privately owned lands.
2. Only displaying water erosion potential as a geologically hazardous area. In addition to water erosion potential, wind erosion potential covers approximately 22% of the agricultural area in this community.

Critical Area Functions

Critical area functions, including water quality, habitat, soil health, and hydrology, are discussed below. This discussion focuses on existing functions and potential stressors on functions from agricultural activities on private lands.

Water Quality Function
• Much of the water quality functions in Franklin County are related to the Columbia, Snake, and Palouse rivers and water conveyance facilities. In this unit, the Columbia River near Kennewick is listed on the Washington State Department of Ecology 303(d) List as Category 5 for temperature; several wasteways on the west side of the county are listed for temperature; Potholes Canal is listed for pH and temperature; Esquatzel Coulee is listed for dissolved oxygen, pH, and temperature in various locations; the Snake River is listed for dissolved oxygen, temperature, and total phosphorus; and the Palouse River is listed for pH (Ecology 2016). • Riparian vegetation includes a mix of native and introduced trees and shrubs (WDFW 2006). These areas provide stream cover, which reduces temperatures and helps to filter surface and groundwater inputs.
Habitat Function
• **Upland and riparian habitat:** Upland and riparian habitat in agricultural areas primarily occurs in the margins between fields. These areas and the cultivated fields provide shelter and migration corridors for terrestrial species and forage and breeding opportunities, particularly for a variety of avian and terrestrial species. The shrub-steppe along Esquatzel Coulee between Mesa and Connell is mostly used as rangeland. • **Aquatic habitat:** The majority of aquatic habitat in the county is associated with water conveyance facilities and seasonal streams. Wetlands are primarily present immediately adjacent to the Columbia, Snake, and Palouse rivers and in the northwest portion of the county near water conveyance facilities and reservoirs. Riparian and wetland vegetation provides cover and food inputs for aquatic species. • **Wildlife and habitat**: Priority species and habitat occurrences in the county include burrowing owl, ferruginous hawk, sandhill crane, and waterfowl concentrations. Game species include ring-necked pheasant and mule deer. Habitats primarily include cliffs and bluffs and shrub-steppe.
Soil and Hydrology Functions
• Surface water moves significant amounts of flow through this area for irrigation supply and creates wetland and stream-like habitat as water moves through topographic lows. • Soils are characterized as sandy and silty loams with severe water erosion susceptibility areas located throughout the county.

Indirect Effects of Agriculture on Critical Area Functions

Indirect effects occur within areas that are not adjacent to or within critical areas. Within Franklin County, agricultural activities can have indirect effects on surface and groundwater quality function and quantity (hydrology function).

Severe water erosion susceptibility areas are designated across the Esquatzel Coulee unit, which can affect soil health and agricultural viability, and have been identified as a management concern for this area. Water erosion is a concern in steeper slope areas and can be exacerbated by intensive crop management practices or wildfires.

Groundwater in the area is found in both shallow and deep aquifers. Aquifers located in coarse or fine grained alluvial sediments are particularly susceptible to surface contamination from nearby

sources, if present (Lindsey and Newman 2017). Agricultural sources of contamination can include agricultural runoff, animal feeding operations, and fertilizers and pesticides.

Objectives and Key Practices

Protection/Enhancement Objectives	Key Stewardship Practices
• Protect and enhance PHS-listed shrub-steppe and juniper savannah habitat • Protect and enhance riparian and wetland habitat, particularly in areas adjacent to the Columbia and Snake rivers[1] • Protect soils from water and wind erosion, including those listed as sever water erosion potential located throughout the county and Ringold formation soils adjacent to the Columbia River • Manage nutrients and pesticides effectively and efficiently to protect surface and groundwater • Manage irrigation water so it is delivered, scheduled, and/or applied efficiently	• Critical area planting • Range planting • Stream habitat improvement and management • Till and residue management • Direct seed • Conservation cover • Irrigation water management • Nutrient management

Notes:
PHS: Priority Habitat and Species

1. Restoration and protection opportunity from *Franklin County Shoreline Master Program Update Cumulative Impacts Analysis Report* (Anchor QEA 2015).

References

Anchor QEA (Anchor QEA, LLC), 2015. *Franklin County Shoreline Master Program Update Cumulative Impacts Analysis Report*. Prepared for Franklin County. August 2015.

Brincken, E.A., 2006. *Soil Survey of Franklin County, Washington*. Prepared for the United States Department of Agriculture, Natural Resources Conservation Service. Issued 2006.

Ecology (Washington State Department of Ecology), 2016. Washington State Water Quality Assessment 303(d)/305(b) List Search Tool. Updated: July 22, 2016. Cited: June 8, 2017. Available from: https://fortress.wa.gov/ecy/approvedwqa/ApprovedSearch.aspx.

Lindsey, K. and P. Newman, 2017. *Franklin County Critical Aquifer Recharge Area and VSP*. Technical Memorandum prepared for Ben Floyd, Anchor QEA. March 14, 2017.

WDFW (Washington Department of Fish and Wildlife), 2006. Columbia Basin Wildlife Area Management Plan. November 2006. Available from: http://wdfw.wa.gov/publications/00461/.

Attachment 1

- Watershed Analysis Units: GIS Data Summary Tables

Appendix B-2 Attachment 1
Critical Areas Data Summary Tables

Critical Areas Data Summary Tables

Table 1

Agricultural Activity Landcover

Landcover	Acres	Percent
Total Area	**779,506**	N/A
Agricultural Landcover	**635,719**	**82%**
Irrigated	228,698	36%
Dryland	238,670	38%
Range	168,351	26%

Global Notes: - Agricultural areas included in VSP are limited to privately-owned lands. Additionally, incorporated city/town limits are not included in VSP and are excluded from these calculations.
- See Appendix B-1 for GIS data sources and methods.
- Critical area percentages are based on the total private agricultural landcover

Table 2

Critical Areas within Agricultural Lands

Critical Areas		Areas within Agricultural Lands							
		Irrigated		Dryland		Rangeland		Total	
		Acres	*Percent*	*Acres*	*Percent*	*Acres*	*Percent*	*Acres*	*Percent*
Wetlands		286	<1%	503	<1%	1,205	0%	1,993	<1%
Fish and Wildlife Habitat Conservation Areas[1,2]		12,518	2%	5,093	1%	46,341	7%	63,951	10%
Critical Aquifer Recharge Areas		80,250	13%	2,198	0%	2,546	<1%	84,994	13%
Geologically Hazardous Areas	Water Erosion	15,770	2%	92,151	14%	98,789	16%	206,710	33%
	Wind Erosion	78,189	12%	24,265	4%	35,485	6%	137,939	22%
Frequently Flooded Areas		1,149	0%	3,233	1%	5,142	1%	9,524	1%

Notes:

1. Excluding game species (see Table 6 for full list of game species)
2. Summary Priority and Habitat Species numbers are collapsed so that overlapping species or habitats are not double counted

Table 3

Stream Summary

Critical Areas	Areas within Agricultural Lands							
	Irrigated		Dryland		Rangeland		Total	
	Miles	*Percent*	*Miles*	*Percent*	*Miles*	*Percent*	*Miles*	*Percent*
Streams Total	**133**	**6%**	**795**	**37%**	**742**	**34%**	**1,670**	**78%**
Shorelines of the State	<1		<1		4		4	
Fish Use or Potential Fish Use	<1		2		4		6	
No Fish Use	2		2		21		25	
Unknown	131		791		713		1,635	

Wetlands Data Summary

Table 4

Wetland Summary

Critical Areas	Acres within Agricultural Lands			
	Irrigated	Dryland	Rangeland	Total
Wetlands (all types)	**286**	**503**	**1,205**	**1,993**
Freshwater Emergent Wetland	158	287	475	919
Freshwater Forested/Shrub Wetland	4	14	16	34
Lake/Pond	114	152	500	766
Riverine	7	41	145	193
Other	3	8	69	80

Fish and Wildlife Habitat Conservation Areas - PHS Data Summary

Table 5

Priority Habitats and Species (PHS) Summary - excluding game species[1,2]

Critical Areas	Acres within Agricultural Lands			
	Irrigated	Dryland	Rangeland	Total
Priority Habitats and Species	**12,518**	**5,093**	**46,341**	**63,951**
Birds	**12,365**	**2,948**	**12,188**	**27,501**
American White Pelican	0	0	<1	0.02
Burrowing Owl	166	4	94	264
Ferruginous Hawk	10,895	2,706	10,976	24,577
Great Blue Heron[3]	0	0	0	0
Grebe Species	0	0	<1	<1
Sandhill Crane	463	66	51	580
Waterfowl Concentrations	841	171	1,068	2,080
Cliffs/bluffs	**1**	**187**	**1,404**	**1,592**
Shrub-Steppe	**156**	**2,103**	**39,595**	**41,854**
Juniper Savannah	**0**	**0**	**112**	**113**

Notes:

1. Excluding game species (see Table 6 for full list of game species)
2. Summary Priority and Habitat Species numbers are collapsed so that overlapping species or habitats are not double counted
3. There are no known or mapped occurrences on private agricultural lands; mapped occurrences are within public lands

Table 6

PHS Summary (game species)[1]

Critical Areas	Acres within Agricultural Lands			
	Irrigated	Dryland	Rangeland	Total
PHS (Game Species)	**723**	**72,202**	**54,857**	**127,782**
Birds	**6**	**109**	**837**	**952**
Chukar	0	0	<1	<1
Ring-necked Pheasant	6	109	837	952
Mammals	**716**	**72,094**	**54,041**	**126,851**
Mule Deer	80,250	2,198	2,546	84,994

Notes:

1. Summary Priority and Habitat Species numbers are collapsed so that overlapping species or habitats are not double counted

Geologically Hazardous Areas - Water Erosion Potential

Table 7

Critical Aquifer Recharge Areas

Critical Areas	Acres within Agricultural Lands			
	Irrigated	Dryland	Rangeland	Total
Water Erosion Potential	**80,250**	**2,198**	**2,546**	**84,994**
Wellhead Protection	378	481	1,718	2,577
Irrigated Group "A" Soils	79,872	1,717	828	82,417

Table 8

Water Erosion Potential

Critical Areas	Acres within Agricultural Lands			
	Irrigated	Dryland	Rangeland	Total
Water Erosion Potential	**15,770**	**92,151**	**98,789**	**206,710**
Ringold Erosive Slopes	3,590	1,453	3,151	8,194
Severe to Very Severe	12,180	90,698	95,637	198,516

Appendix B-3
Franklin County CAO Designations and Definitions

Appendix B-3: Franklin County CAO Designations and Definitions

Franklin County Critical Areas and Resources Lands Code (Chapter 18.08)

General Provisions

Critical areas in Franklin County are categorized as follows:

1. Wetlands
2. Fish and Wildlife Habitat Conservation Areas
3. Critical Aquifer Recharge Areas
4. Geologically Hazardous Areas
5. Frequently Flooded Areas

Resource Information and Maps (Franklin County Code [FCC] 18.08.080):

Identification of critical areas. The County's Critical Area Overlay Maps are developed utilizing the maps and inventories listed and included in the County Best Available Science (Appendix A of this chapter). The Critical Area Maps include the following:

- Federal Emergency Management Agency's (FEMA) 100-year flood map
- County Geologically Hazardous Map
- County Critical Aquifer Recharge Map
- County Wetland Map
- Other map(s) as are appropriate.

In some cases, the Critical Area Reference Maps identified herein display general locations and approximate boundaries of potential critical areas. Further field determination and analysis may be necessary for specific development proposals to establish exact location, extent, and nature of critical areas. Fish and Wildlife Habitat Conservation Areas are identified using the references, maps, and criteria established in Article VI.

Wetlands

Identification and Designation (FCC 18.08.220)

Wetlands shall be identified and delineated using the Washington State Wetlands Identification and Delineation Manual for Eastern Washington[1]. Classification and rating of wetlands will be done using the Washington State Wetlands Rating System for Eastern Washington.

[1] Ecology (Washington State Department of Ecology), 2007. *Washington State Wetlands Identification and Delineation Manual for Eastern Washington*. Ecology Publication #04-06-15. March 2007.

The following wetlands may not be further regulated by this article:

- Artificial wetlands within the developed portion of the Columbia Basin Irrigation Project.
- Areas that may meet the definition of "artificial wetlands" that are managed and regulated by the U.S. Bureau of Reclamation.
- Wetland areas identified on the National Wetland Inventory maps with an artificial designation when it can be shown that the area(s) noted was (were) intentionally created from a non-wetland site.

Fish and Wildlife Habitat Conservation Areas

Identification and Classification (FCC 18.08.510)

The following information, data, and resources are used in Franklin County to identify Fish and Wildlife Habitat Conservation Areas:

- Both federal and state fish and wildlife listed threatened or endangered species in Franklin County as designated under the Federal Endangered Species Act or within the Washington Administrative Code Chapter 232-12 (Priority Species and Habitats).
- Federal and/or state candidate species and species of local importance
- Franklin County allows for the nomination of "Species/Habitats of Local Importance," to designate these areas the following must be performed:
  - Demonstrate a need for special consideration;
  - Propose relevant management strategies considered effective and within the scope of this chapter;
  - Provide species habitat location(s) on a map (scale 1:24,000).
- Riparian Habitat Areas: For the protection of habitat along rivers, streams, and lakes the following buffer widths apply:
  - Type 1 or S – 150 feet
  - Type 2 or F (except Lakes) – 150 feet (100 if no anadromous fish)
  - Type 3 or lakes – 100 feet (75 if no anadromous fish)
  - Type 4 or Np – 50 feet
  - Type 5 or Ns – 50 feet
- Fish and wildlife habitat conservation areas will be classified by Franklin County as follows, based on a variety of data sources as identified herein:
  - Priority Habitat Areas — seasonal ranges and habitat elements with which federal and/or state listed endangered and threatened species have a primary association and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term;

  - Important Habitat Areas — habitat areas that are associated with and actively utilized by federal and/or state candidate species and species designated as being of local importance according to the nomination process.

Critical Aquifer Recharge Areas

Identification and Designation (FCC 18.08.300)

Aquifer Recharge Areas are classified and designated by Franklin County according to the following standards:

- Data sources are available from Franklin County that are used in the mapping of characteristics of aquifer recharge areas
- Areas mapped in Franklin County as critical aquifer recharge areas are as follows:
  - Any areas with both of the following characteristics:
    - Hydrologic A Soils as identified in the Franklin County Soil Survey
    - Irrigated lands
  - Designated Wellhead Protection Areas in Franklin County
  - Areas within one hundred (100) feet of all irrigation district main canals (one hundred [100]) feet from edge of canal)
- The Columbia Basin Ground Water Management Area Advisory Committee continues to study groundwater aquifers and Critical Aquifer Recharge Areas in Franklin County. As new data is developed, the chapter may be amended in the future to accurately reflect the improvement(s) of the relative data and mapping.

Geologically Hazardous Areas

Identification and Designation (FCC 18.08.440)

- Erosion and/or Landslide Hazard Area:
  - Areas with a 15% to 39% slope (Risk Assessment is required)
  - Areas with a 40% percent slope or greater
  - Any areas with all of three of the following characteristics:
    - Slopes that are 15% or greater
    - The sediment group known as Ringold Fines
    - Soils characterized as being severe water erosion hazards. Known generally for its Ringold Fines soils, water erosion soils, and slopes
  - Areas that historically have been prone to landslides
- Seismic Hazard Area: Areas subject to moderate-high and high, soil liquefaction susceptibility

As noted in the Voluntary Stewardship Program (VSP) Work Plan, structures in agricultural lands will continue to be permitted and regulated through the County's Critical Areas Ordinance, notably for landslide, mine, and seismic hazard areas. Geologically hazardous areas for erosion hazards have primary applicability in the VSP context.

Frequently Flooded Areas

Identification and Designation (FCC 18.08.370)

100-year floodplain designations of the FEMA and the National Flood Insurance Program. Categories of frequently flooded areas include the following:

- Floodways - The channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order that the base flood be carried without substantial increases in flood heights.
- Floodplains - The floodway and special flood hazard areas.
- Special Flood Hazard Areas - The area adjoining the floodway which is subject to a one percent or greater chance of flooding in any given year and determined by the Federal Insurance Administration.

Appendix B-4
Agricultural Viability Interview Summary

Appendix B-4: Agricultural Viability Interview Summary

Franklin County has a unique set of factors that make agriculture viable, including a stable climate, a reliable water source, and access to transportation. To obtain a firsthand agricultural viability perspective, several producers in the County were interviewed in February 2017. A compiled summary of the interviews is provided below (Bailie 2017; Cochrane 2017; Harris 2017; Wieseler 2017).

What do you see in terms of trends for agricultural viability in Franklin County or the region?

- Several grain markets are not doing very well which results in less profitability and less money spent on improvements and upgrades, including efforts to control noxious weeds on less valuable ground. This trend is likely to remain for several more years.
- If the market remains low, options like the Conservation Reserve Program may become more viable.
- The market has somewhat improved with expansion of corn and ethanol.
- Depending on the market, some farmers in the U.S. may decide to move to an area that is more viable because it has less regulations, such as South America.
- There continues to be more regulations that farmers must comply with which can reduce viability.
- Currently, not a lot of young people are interested in agriculture. One reason may be because it is very hard to make a living wage that allows for supporting a family.
- Expansion of the Columbia Basin Irrigation Project would increase long-term viability of farms that currently rely on well water.

How do you see the international market affecting agricultural viability?

- The international market has been less willing buy hay at the same price as it used to. The exchange rates make it harder for American farm products to be exported.
- Restrictions on trade with China would hurt U.S. farmers.
- Expanding into the Indian market will be beneficial.
- Many commodities are dependent on the Asian market so fostering the Asian market in the Pacific Northwest will be good for agricultural viability.
- Growing global population is beneficial for exported crops.

In regard to the local agriculture market or practices, what do you see are some strengths, weaknesses, opportunities, and threats (SWOT)?

Strengths:

- Access to transportation and proximity to the ocean allows movement of products between large markets in Asia

- Availability of water and predictable climate allows a large diversity of crops to be grown in the County
- Good soils
- Inexpensive power and water
- Proximity to agricultural processors

Weaknesses:

- Lack of labor force including farm managers, equipment operators, and harvesters
- Dependency on the weather to determine the type of product that can be grown
- Dependency on shipping capability for products to reach international markets
- Dependency on the price of oil
- Dependency on the Asian market
- Inability for young farmers to get established due to not having access to land

Opportunities:

- Expanding our markets overseas into regions such as India and Southeast Asia
- Population growth will result in more people to feed
- New crops that may provide additional opportunities, such as oil producing plants
- Interest in increasing the amount of organic agriculture

Threats:

- Events that result in products not being shipped to international markets, such as the longshoreman's strike.
- Lack of labor force that will replace the current farmers
- More regulations
- Secure sources of water could become unavailable or wells could dry up

Do agricultural producers have the flexibility to respond to fluctuating market conditions that is needed? Are there opportunities to increase flexibility?

- Larger agricultural operations are becoming more common; small family farms are becoming less common. This puts young producers who are trying to get stated in agriculture at a disadvantage because they cannot compete with these large operations.
- Most producers respond to the market, but low commodity prices make it harder for farms to remain flexible.

What types of financial incentives are available to producers to improve the bottom line?

- The low market makes it hard for farmers to make improvements

- Natural Resources Conservation Service (NRCS) and the Conservation District have cost-share programs
- There may be enough programs currently in place, but if there are more government regulations, than additional programs would be needed to comply with regulations
- NRCS programs are available for increasing biodiversity

Can you provide some unique examples of measures being implemented to address items such as soil health, erosion, moisture and nutrient management, weed management, and pollinator/beneficial organism recruitment?

- Funds matching programs have been successful to help control noxious weeds in rangelands
- In the past, commodity payments and market incentives were used and they seemed to help
- Develop more local connections with the public through farmers' markets and culinary institutes which gives people access to local food

References

Bailie, B., 2017. Personal communication with J. Jensen. February 22, 2017.

Cochrane, B., 2017. Personal communication with J. Jensen. February 9, 2017.

Harris, T., 2017. Personal communication with J. Jensen. February 23, 2017.

Wieseler, M., 2017. Personal communication with J. Jensen. February 14, 2017.

Appendix B-5
Franklin County Water Quality 303(d) Listings (2017)

Franklin County Water Quality 303(d) Listings (2017) –
Parameters with Potential Intersects with Agricultural Activities

Water Quality Parameter	Potential Agricultural-related Source
4,4'-DDE	Byproduct of DDT
Bacteria	Animal waste
Dieldrin	Insecticide
Dissolved Oxygen	Organic matter decomposition
Hexachlorobenzene	Fungicide
pH	Indicator
Temperature	Erosion/sediment/canopy cover
Total Chlordane	Erosion/sediment/canopy cover
Total Phosphorus	Insecticide
Toxaphene	Insecticide

Source: Washington Department of Ecology Water Quality Assessment Data accessed June 7, 2017

Appendix B-6
Franklin County Critical Aquifer Recharge Area and VSP

EA Engineering, Science, and Technology, Inc., PBC

8019 West Quinault Avenue, Suite 201
Kennewick, WA 99336
Telephone: 509-591-0264
Cell: 509-947-5729
www.eaest.com

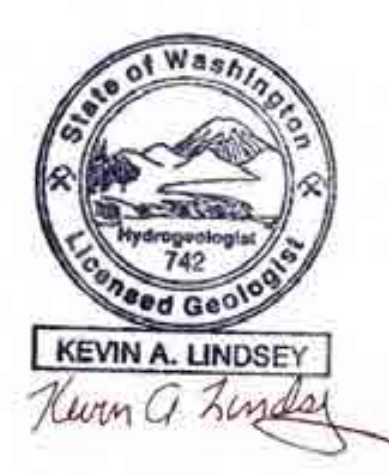
TECHNICAL MEMORANDUM

TO: Ben Floyd, Anchor QEA

FROM: Kevin Lindsey, PhD, LHg., Patty Newman

DATE: 14 March 2017

SUBJECT: Franklin County Critical Aquifer Recharge Area and VSP



1. INTRODUCTION

The objective of the work described in this technical memorandum is to evaluate existing designated Franklin County Critical Aquifer Recharge Area (CARA) functions with respect to groundwater recharge, public drinking water supply well water quality, and potential affects by agricultural activities. This work was done as a part of the Franklin County Voluntary Stewardship Program (VSP). Existing public supply system drinking water wells and associated wellhead protection areas (WHPA's) in the County are shown on Figure 1. The WHPA's correspond to estimated 10-year time of travel for groundwater being pumped by an individual well.

This work is based on existing data sources such as well logs, Washington Department of Health water system information, Columbia Basin Ground Water Management Area (GWMA) maps and reports, and U.S. Geologic Survey (USGS) maps and reports. In addition, Geographic Information System (GIS) databases from local, state, and federal sources were used in completing this work.

The balance of this memorandum is subdivided into sections focusing on the following:

- A summary of basic groundwater conditions in Franklin County which is supplemented by a basic summary of regional hydrogeology in Attachment A.
- Description and interpretation of the Franklin County Critical Aquifer Recharge Area (CARA) ordinance.
- A review of public water system groundwater supply in the County in the Franklin County CARA context.
- Conclusions

This memo was prepared by EA Engineering, Science, and Technology, Inc., PBC under subcontract to Anchor QEA LLC, as part of their contract with Franklin County.

2. FRANKLIN COUNTY GROUNDWATER SUMMARY

The basic geologic and hydrogeologic framework of the region is described in a number of

reports. While not a complete listing of these reports, Waters (1961), Mackin (1961), Grolier and Bingham (1971, 1978), Hansen et al. (1994), Smith et al. (1989), Tolan et al. (1989, 2009), GWMA (2009, 2011a, 2011d), Burns et al. (2011), Kahle et al. (2011), Reidel et al. (2002, 2013), and Ely et al. (2014) offer reviews, summaries, and/or detailed descriptions of many aspects of that framework. The reports, and others cited in them, describe the geologic history, physical geology, and hydrogeologic regimes in Franklin County. The following paragraphs, which are based on these reports, provide a very brief summary of basic Franklin County groundwater conditions. Attachment A provides a more complete, yet still basic, review of Franklin County hydrogeology.

Franklin County is underlain by unconfined to locally semi-confined aquifers found in coarse grained (sand and gravel) and fine grained (silt and clay) alluvial sediments, semi-confined to confined aquifers in the shallowest basalt units typically associated with the Saddle Mountains Basalt and the upper Wanapum Basalt, and regional confined aquifer systems associated with the lower Wanapum Basalt and the Grande Ronde Basalt. Figure 2, a generalized surficial geologic map of the County, provides some basic guidance as to where aquifer hosting geologic units occur at the ground surface which is where they would most likely receive recharge.

The alluvial aquifer system, as noted above, is unconfined to semi-confined and occurs in coarse grained alluvial and fine grained alluvial strata. With respect to the alluvial aquifer system:

- Generally, it occurs in southern Franklin County in thick cataclysmic flood deposited sand and gravel and it is usually unconfined.
- In western Franklin County it commonly occurs in older, consolidated, fine-grained and coarse grained strata such as crops out along the Columbia River. Groundwater in these strata may be semi-confined and is the source of the springs commonly seen along the river.
- In the eastern portion of the County, west of Highway 395, this aquifer system is generally localized in coarse flood deposits found in channeled scabland coulees such as Kahlotus Coulee, Washtucna Coulee, and Esquatzel Coulee.
- Because this unit is at the ground surface, groundwater in it can be easily recharged by precipitation and surface activities.
- As a result, public water supply wells in the alluvial aquifer system will generally use locally sourced and recharged groundwater, and should be considered potentially susceptible to surface contamination sources, if present.

Figure 3 illustrates the surface occurrence of alluvial strata in Franklin County. It is important to note that the widespread loess deposits (a significant alluvial unit) in the central and eastern County (as shown on Figure 3) is fine grained sandy silt and it generally does not host sufficient groundwater for public water supply system use.

The primary groundwater systems underlying Franklin County that supply public water supply system wells extract water from the shallower and deeper portions of the Columbia River basalt aquifer. The Columbia River basalt generally consists of widespread layers of basalt, also referred to as basalt flows, the tops and bottoms of which commonly host significant quantities

of groundwater. Where these potentially water-bearing flow tops and bottoms reach, or come close to, the ground surface is where they would most commonly receive recharge. Figures 4A and 4B diagrammatically illustrate this basic relationship between basalt layers (which form the aquifers) and potential groundwater recharge related to precipitation and surface activities.

For this project we generally subdivide the Columbia River basalt aquifer underlying Franklin County into a shallow groundwater system and a deeper groundwater system. In the shallow system, generally corresponding to the Saddle Mountains Basalt and the upper Wanapum Basalt (Priest Rapids Member and Roza Member), multiple basalt layers, and potentially the groundwater in them, occur at or near the ground surface in the central to eastern County and are potentially receiving modern recharge such as illustrated in Figures 4A and 4B. Surface and near surface occurrences of the strata (Figure 5) hosting the shallow basalt groundwater system commonly occur within less than 10 miles of public water supply system wells. With respect to the deeper groundwater system, which consists of the lower Wanapum Basalt (Frenchman Springs Member) and the Grande Ronde Basalt, the surface occurrences of aquifer hosting units (Figure 6) are many miles away from the public water supply system wells pumping water from them.

3. FRANKLIN COUNTY CARA ORDINANCE

Franklin County defines a CARA (see Franklin County Ordinance Chapter 18.08.290) as "…those aquifer recharge/interchange areas that have an effect on, or are associated with, aquifers used for potable water in community water systems." These areas are in turn classified and designated in three ways, as follows:

1. As "Any areas with both of the following characteristics:
    a) Hydrologic A Soils as identified in the Franklin County Soil Survey;
    b) Irrigated lands."
2. As "Designated Wellhead Protection Areas in Franklin County."
3. And as "Areas within one hundred (100) feet of all irrigation district main canals (one hundred (100) feet from edge of canal)."

In this context CARA's for the purpose of Franklin County VSP will be where recharge areas and WHPA's: (1) extend beyond, or exist outside of, urban growth boundaries for public water systems in Franklin County, (2) encompass irrigated land with Hydrologic A soils, and/or (3) are within one hundred feet of an irrigation canal.

This type of classification and designation is similar to those used by most eastern Washington CARA's because it incorporates surface soils with high infiltration capacity and WHPA's designated to protect public water systems. With that though Ecology CARA Guidance (Ecology 2005) does state that there is more than one way to classify CARA's. As summarized on page 22 of that document these could include classifications based on susceptibility to groundwater contamination. Examples of such classification and designation criteria listed in Ecology CARA Guidance include such things as the groundwater source being: (1) water table sand and gravel aquifers, (2) deeper less susceptible aquifers, or (3) confined aquifers. Because many public water supply systems in Franklin County, especially the larger municipal ones, get

their water from deep, confined basalt aquifers a VSP CARA program should be based on a basic understanding of County hydrogeologic conditions to avoid unnecessarily restrictive VSP activity on rural lands.

A juxtaposition of hydrogeology and the Franklin County CARA ordinance suggests that the County VSP effort can easily accommodate reasonable, cost effective actions that are protective of public water system groundwater supplies. For example, a shallow water system supply well likely is in a shallow basalt aquifer or shallow sand and gravel aquifer. Such a well commonly will produce groundwater recharged in close proximity to the well within a designated WHPA and/or irrigated Hydrologic A soils. In such a case VSP effort near such wells will combine actions to meet the goals of CARA and WHPA.

Conversely, for deep sealed wells the ordinance language may lead to activities at the surface around the well, that while they meet the goals of CARA and WHPA, they do not actually effect that recharge to that well because: (1) vertical groundwater movement downwards from the surface to the producing aquifer is slow to essentially non-existent within the WHPA and/or (2) actual recharge to the water producing aquifer occurs many miles away and outside of the WHPA. In such cases, VSP activities in a defined WHPA for a deep well may be misdirected because they have no effect on groundwater protection for the well in question.

The implications of this for the Franklin County CARA VSP effort is that one should understand where the aquifer(s) being pumped in a well approaches the land surface where it can more quickly receive recharge. In some cases this recharge area will lie in irrigated A soils, within a WHPA, and/or be within 100 feet of a canal, in others it will not. Given this context Figure 2 illustrates the basic surface geology of the County, locations of water supply system wells, and currently designated WHPA's for those wells. Figure 3 shows the locations of these wells, the WHPA's, and canals. Subsequent sections of this memo summarize the hydrogeologic setting of the County and the relationship of hydrogeology, CARA, WHPA, and VSP.

4.0 GROUNDWATER SUPPLY, CARA, AND VSP IN FRANKLIN COUNTY

The goal of this section is to explore the relationship between public water supply system groundwater supply, potential aquifer(s) supplying the wells, and WHPA's in the context of the Franklin County CARA ordinance. Our review of public water system records indicate that there are 65 public water supply system wells registered in the County (locations shown on Figure 1). Of these 65 wells 11 are owned and operated by incorporated municipal water supply systems, including Connell, Kahlotus, Mesa, and Pasco. Dividing the County into the three subdivisions shown on Figure 1, these wells are apportioned as shown on Table 1. Of the incorporated municipal wells 9 of them have WHPA areas entirely, or almost entirely, within their respective urban growth boundaries. Incorporated municipalities having 1 or more of these wells include Connell, Kahlotus, Mesa, and Pasco.

Table 1. Number of Public Water System Wells in Franklin County.

County Subdivision	Total public water system wells	Number of incorporated municipal supply system wells
Northwest	21	2
Southwest	31	1
Eastern	13	8

To aid in our evaluation of CARA and VSP we made preliminary interpretations of the potential water producing intervals for the public water supply system wells using the following approach.

1. The location of each well was plotted on a geologic map of the County (Figure 2) based on coordinates (if available). If coordinates are not available the wells are located to the nearest quarter-quarter section.
2. Assuming a well is only drilled deep enough to get the required amount of water, and that the primary water producing interval in the well is near the bottom of the well, using a GIS approach we compared the depth of the well to previously prepared subsurface hydrostratigraphic maps (GWMA 2011d). With that, if the bottom of the well was above the top of basalt the well is identified as an alluvial aquifer well.
3. For wells that have a total depth deeper than the top of basalt, they are identified as basalt aquifer system wells and assigned to the separate basalt aquifer subdivisions as follows:

    a. A well is assigned to the Saddle Mountains if the bottom of the well is above the top of the Wanapum Basalt.
    b. A well is assigned to the upper Wanapum if the bottom of the well is above the top of the Frenchman Springs Member of the Wanapum Basalt.
    c. A well is assigned to the lower Wanapum if the bottom of the well is above the top of the Grande Ronde Basalt.
    d. A well is assigned to the Grande Ronde if the bottom of the well is greater than 50 feet below the top of the Grande Ronde.

4. Taking this process a step further, and based on the basic hydrogeologic framework of the County, alluvial, Saddle Mountains, and upper Wanapum wells are determined to be shallow wells while wells open to the entire Wanapum, the lower Wanapum, and the Grande Ronde are determined to be deep wells.

This method could be refined with a well specific review of well construction and subsurface data, more closing matching water producing intervals in a given well to hydrostratigaphic units intersected by each well, much as was done previously for incorporated municipalities in the GWMA (GWMA 2012).

The results of this well review results in the following conclusions with respect to public water supply system wells in the County:

- There are 42 shallow wells found in the 3 subdivisions (Table 2).
- There are 18 deep wells found in the 3 subdivisions (Table 2).

- In addition to these assignments we also found 5 wells for which we cannot interpret source aquifer because of a lack of well depth information.

Table 2. Number of Public Water System Wells in Franklin County Open to Specific Aquifers.

County Subdivision	Shallow	Deep	Unknown
Northwest	16	4	1
Southwest	25	2	4
Eastern	1	12	0

In the context of the Franklin County CARA ordinance, shallow wells – that is wells interpreted to be extracting groundwater from nearby surface geologic units and/or wells with a WHPA intersecting the same unit the well is pumping from, and/or irrigated lands with Hydrologic A Soils, and/or areas within one hundred feet from all irrigation district main canals – would be those that could be considered at greatest potential risk from surface contamination under VSP. Therefore, VSP activities potentially associated with these types of wells could focus on those having a WHPA encompassing the area where the water producing unit is present at the surface in the WHPA. We identify 14 alluvial wells and 28 Saddle Mountains and upper Wanapum wells in the County. Of these over half of the alluvial and Saddle Mountains wells are in the Southwest subdivision. The remaining alluvial and Saddle Mountains wells, along with the majority of upper Wanapum wells, all reside in the Northwest subdivision.

With respect to deeper wells – those identified as open to units exposed at the surface many miles away from the well – these would have a low risk of contamination from surface activities per Ecology guidance because they are confined, deep, and/or pumping fossil groundwater. In the context of the Franklin County CARA VSP, activities associated with these types of wells likely would focus on regional agreements and practices that acknowledges the regional nature of the deeper aquifer systems and the small risk of surface contamination effecting these wells in the foreseeable future. For VSP activities related to those wells they could focus on well construction and rehabilitation to protect against leakage that circumvents the natural slow vertical movement associated with these confined systems. We estimate that approximately 18 water supply wells are lower Wanapum and Grande Ronde wells having distal recharge areas.

To conclude, based on our evaluation of the County CARA and hydrogeology, of the 65 public system wells, over half of them are shallow wells, those open to the alluvial unit, the Saddle Mountains and/or the upper Wanapum. Given that these units commonly crop out in, or near WHPA's, irrigated lands with Hydrologic A Soils, and areas within one hundred feet of irrigation canals, these wells could be considered to be the public water supply wells with the highest potential susceptibility to contamination in their recharge areas on rural lands subject to VSP.

The remaining public water supply system wells in the County are deeper wells, namely those wells primarily pumping from the lower Wanapum and the Grande Ronde. Unlike the shallower

wells, WHPA's for these wells do not encompass outcrops of the water bearing strata they are pumping from. Instead, these strata outcrop many miles away from the wells, commonly out of the County. Given that, these wells likely receive there recharge outside of their WHPA's. Consequently, they would be considered to have very low susceptibility to contamination from surface activities many miles away.

4. REFERENCES

Burns, E.R., Morgan, D.S., Peavler, R.S., and Kahle, S.C., 2011, Three-dimensional model of the geologic framework for the Columbia Plateau Regional Aquifer System, Idaho, Oregon, and Washington: U.S. Geological Survey Scientific Investigations Report 2010-5246, 44p., accessed March 1, 2011, at http://pubs.usgs.gov/sir/2010/5246/.

ECOLOGY (Washington State Department of Ecology), 2005, Critical Aquifer Recharge Areas, Guidance Document, Publication Number 05-10-028

Ely, D.M., Burns, E.R., Morgan, D.S., and Vaccaro, J.J., 2014, Numerical Simulation of Groundwater Flow in the Columbia Plateau Regional Aquifer System, Idaho, Oregon, and Washington: U.S. Geological Survey Scientific Investigations Report 2014-5127, 89 p.

Grolier, M.J., and Bingham, J.W., 1971, Geologic Map and Sections of Part of Grant, Adams, and Franklin Counties, Washington, U.S. Geological Survey Miscellaneous Geologic Investigations Series Map I-589, scale 1:62,500.

Grolier, M.J., and Bingham, J.W., 1978, Geology of Parts of Grant, Adams, and Franklin Counties, East-Central Washington, Washington State Department of Natural Resources, Division of Geology and Earth Resources, Bulletin No. 71.

GWMA, 2009, Geologic framework of selected sedimentary and Columbia River Basalt Group units in the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, Edition 3: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by GSI Water Solutions, Inc. and the Franklin County Conservation District, June 2009.

GWMA, 2011a, A summary of hydrochemical evidence for groundwater compartmentalization and modern recharge within the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by GSI Water Solutions, Inc. and S.S. Papadopoulos and Associates, Inc., June 2011.

GWMA, 2011d, Geologic framework of selected sedimentary and Columbia River Basalt Group units in the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, Edition 4: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by GSI Water Solutions, Inc. and the Franklin County Conservation District, June 2011.

GWMA, 2012, Columbia Basin Ground Water Management Area Municipal Groundwater Supply Review: Current Conditions and Predicted Future Conditions: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by GSI Water Solutions, Inc. and S.S. Papadopoulos and Associates, Inc., October, 2012.

Hansen, A.J., Jr., Vaccaro, J.J., and Bauer, H.H., 1994, Ground-water flow simulation of the Columbia Plateau regional aquifer system, Washington, Oregon, and Idaho: U.S. Geological Survey, Water-Resources Investigations Report 91-4187, 81 p., 15 sheets.

Kahle, S.C., Morgan, D.S., Welch, W.B., Ely, D.M., Hinkle, S.R., Vaccaro, J.J., and Orzol, L.L., 2011, Hydrogeologic framework and hydrologic budget components of the Columbia Plateau Regional Aquifer System, Washington, Oregon, and Idaho: U.S. Geological Survey Scientific Investigations Report 2011-5124, 66 p.

Mackin, J.H., 1961, A Stratigraphic Section in the Yakima Basalt and Ellensburg Formation in south-central Washington: Washington Division of Mines and Geology Reports of Investigations 19, 45 p.

Reidel, S.P., Johnson, V.G., and Spane, F.A., 2002, Natural Gas Storage in Basalt Aquifers of the Columbia Basin, Pacific Northwest USA: A Guide to Site Characterization, Pacific Northwest National Laboratory, Richland, Washington.

Reidel, S.P., Camp, V.E., Tolan, T.L., and Martin, B.S., 2013, The Columbia River flood basalt province: Stratigraphy, aerial extent, volume, and physical volcanology, In Reidel, S.P., Camp, V.E., Ross, M.E., Wolff, J.A., Martin, B.S., Tolan, T.L., and Wells, E.E., eds., The Columbia River Flood Basalt Province: Geological Society of America Special Paper 497, p. 1-43.

Smith, G.A., Bjornstad, B.N., and Fecht, K.R., 1989, Neogene Terrestrial Sedimentation on and Adjacent to the Columbia Plateau, Washington, Oregon, and Idaho, in, Reidel, S.P., and Hooper, P.R., eds., Volcanism and tectonism in the Columbia River flood-basalt province: Geological Society of America Special Paper 239, p. 187-198.

Tolan, T.L., Reidel, S.P., Beeson, M.H., Anderson, J.L., Fecht, K.R., Swanson, D.A., 1989, Revisions to the Estimates of the Aerial Extent and Volume of the Columbia River Basalt Group, in Volcanism and Tectonism in the Columbia River Flood-Basalt Province, Special Paper 239, edited by Reidel, S.P and Hooper, P.R., pp. 1-20, Geological Society of America, Boulder, Colorado.

Tolan, T.L., Martin, B.S., Reidel, S.P., Anderson, J.L., Lindsey, K.A., and Burt, W., 2009, An introduction to the stratigraphy, structural geology, and hydrogeology of the Columbia River Flood-Basalt Province: A primer for the GSA Columbia River Basalt Group field trips, *in* O'Connor, J.E., Dorsey, R.J., and Madin, I.P., eds., Volcanoes to Vineyards: Geologic Field Trips through the Dynamic Landscape of the Pacific Northwest: Geological Society of America Field Guide 15, p. 599-643, doi: 10.1130/2009.fld015(28).

Waters, A.C., 1961, Stratigraphic and Lithologic Variations in Columbia River Basalt: American Journal of Science, v. 259, p. 583-611.

Figures

This page intentionally left blank

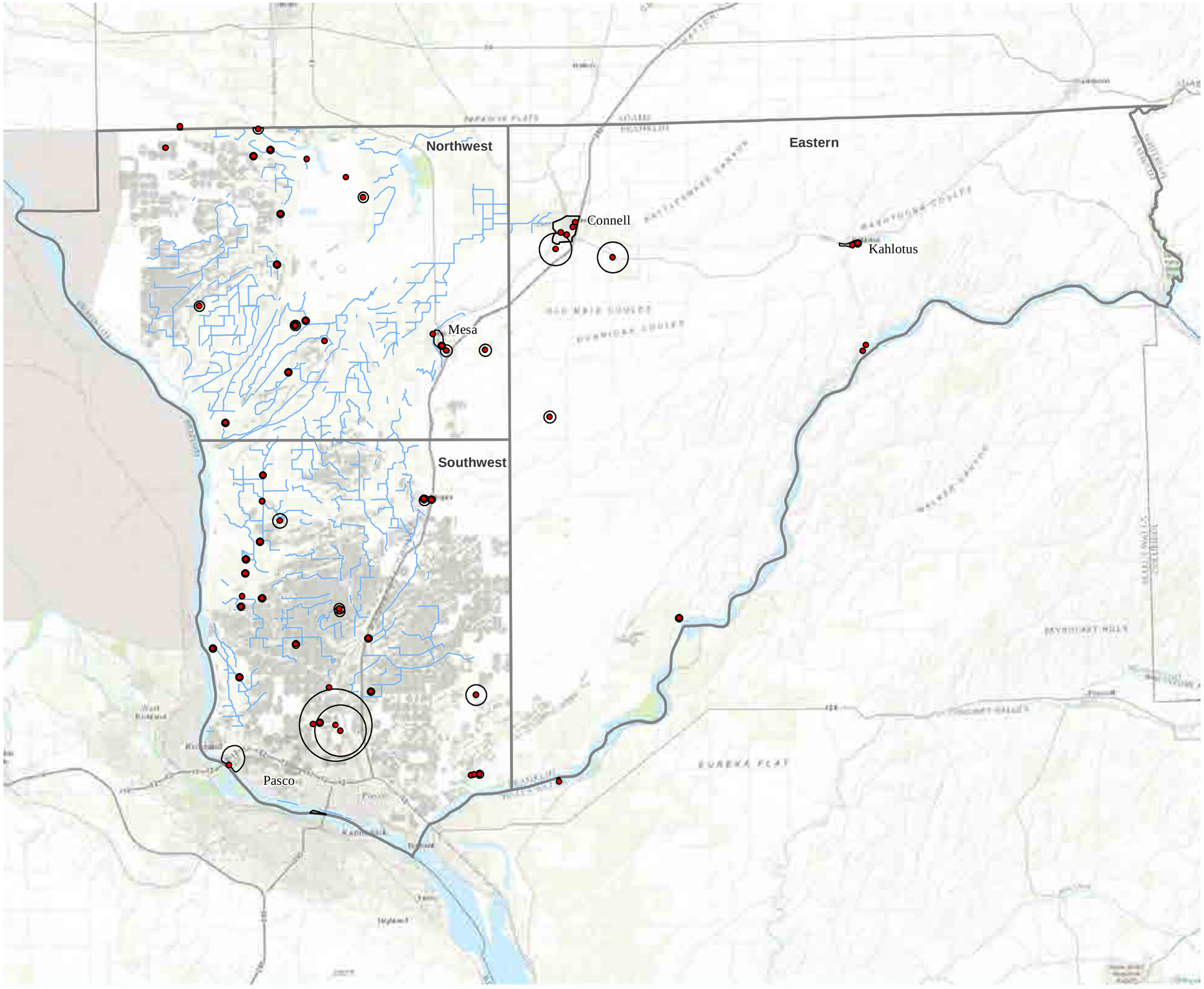


Figure 1.

Geography, Public Water Supply Well Locations, and Wellhead Protection Areas in Franklin County.

Legend

- Public Water Supply Wells
- Franklin County WHPA TOT 10yr
- Canals and Ditches
- Irrigated Group A Soils

0 3.5 7 14

Miles

N

EA Engineering, Science, and Technology, Inc., PBC

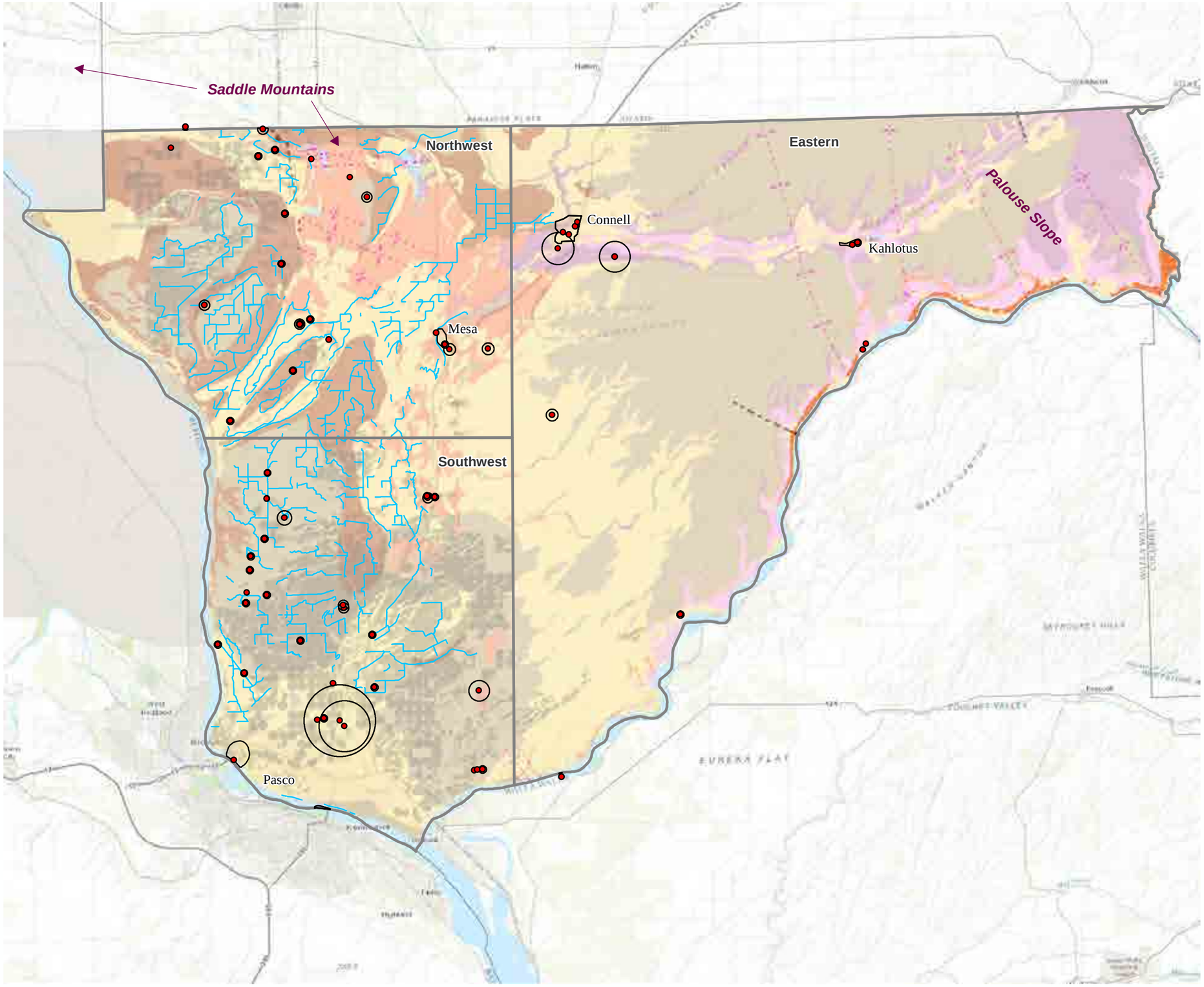


Figure 2.

Public Water Supply Wells and General Surface Geology of Franklin County.

Legend

- Public Water Supply Wells
- Franklin County WHPA TOT 10yr
- Canals and Ditches
- Irrigated Group A Soils
- Quaternary and Pleistocene unconsolidated sediments
- Quaternary Sediments (predominantly loess)
- Pleistocene and Miocene sedimentary rocks and deposits
- Saddle Mountains Basalt
- Priest Rapids Member and Roza Member (Upper Wanapum Basalt)
- Frenchman Springs Member (Lower Wanapum Basalt)
- Upper Grande Ronde Basalt

Faults

- Normal fault
- Thrust fault

Strike-Slip Movement

- Right-lateral strike-slip fault

Folds

- Anticline
- Syncline
- Monocline, anticlinal bend

0 3.5 7 14

Miles

N

EA Engineering, Science, and Technology, Inc., PBC

Figure 3.

Alluvial Strata ans Public Supply Wells in Franklin County.

Connell

Kahlotus

Mesa

Pasco

EUREKA FLAT

Legend

- Alluvial Water Supply Wells
- WHPA TOT 10yr
- Quaternary and Pleistocene unconsolidated sediments
- Quaternary Sediments (predominantly loess)
- Pleistocene and Miocene sedimentary rocks and deposits

0 3.5 7 14

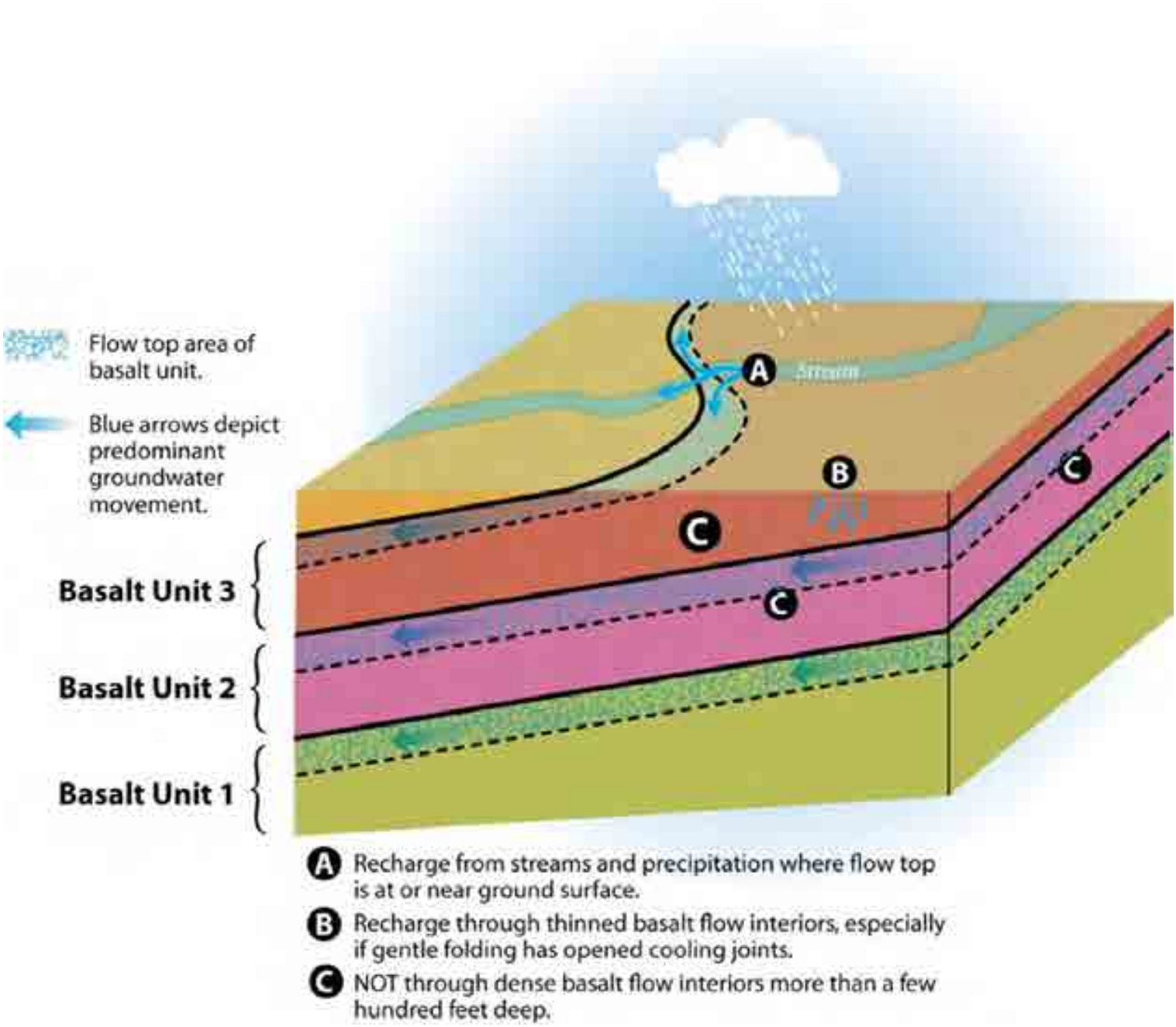
Miles

N

EA Engineering, Science, and Technology, Inc., PBC

Figure 4A.

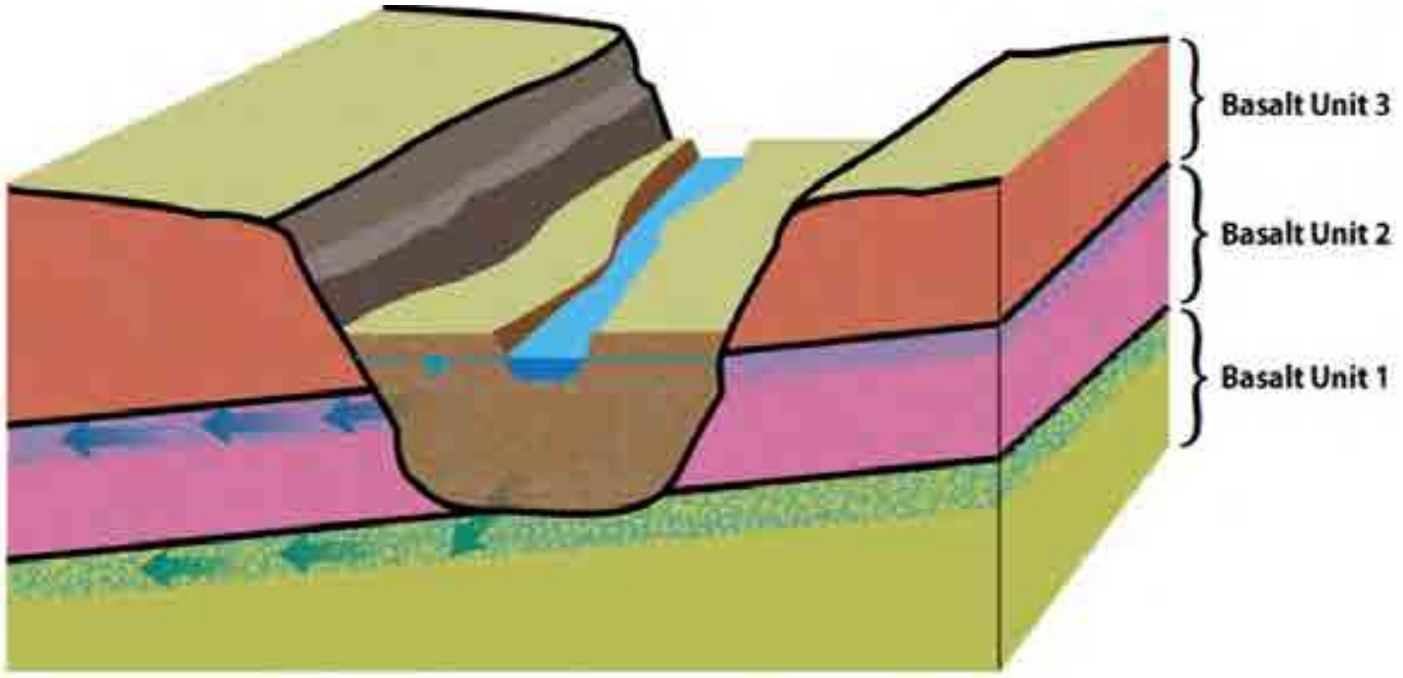
Illustration of Potential Groundwater Recharge Pathways to the Columbia River Basalt.



EA Engineering, Science, and Technology, Inc., PBC

Figure 4B.

Illustration of Potential Groundwater Recharge Pathways to the Columbia River Basalt (continued).



Groundwater in coulee fill gravel recharges interflow zones cross-cut by coulee.

Blue arrows depict predominant groundwater movement.

Flow top area of basalt unit.

EA Engineering, Science, and Technology, Inc., PBC

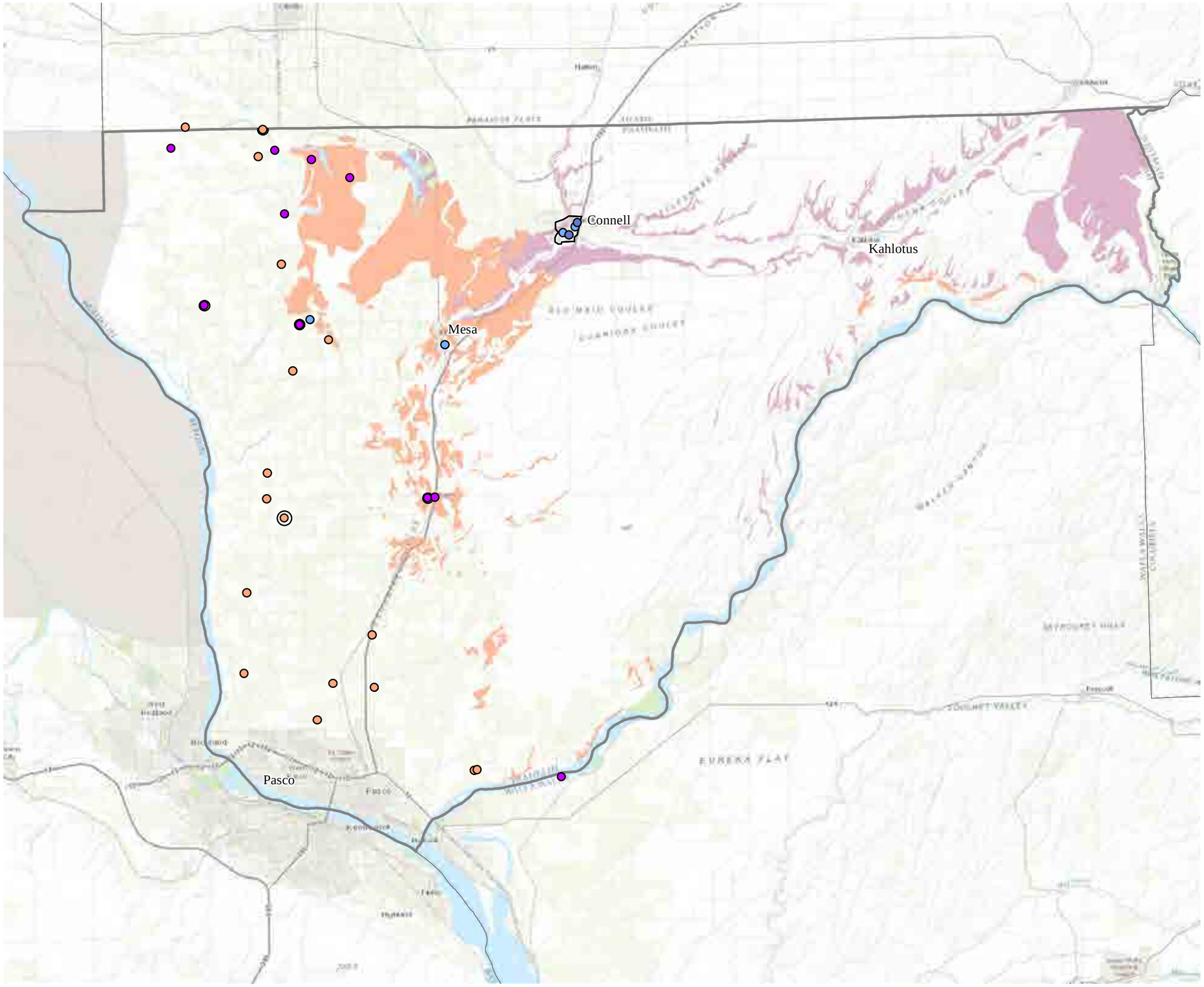


Figure 5.

Saddle Mountains and Upper Wanapum Basalt Outcrops and Public Water Supply Wells in Franklin County.

Legend

Public Water Supply Well Primarily Open to:

- Saddle Mountains Basalt
- Upper Wanapum Basalt
- Wanapum Basalt
- Wanapum Basalt and Upper Grande Ronde Basalt
- WHPA TOT 10yr
- Saddle Mountains Basalt
- Priest Rapids Member and Roza Member (Upper Wanapum Basalt)

0 3.5 7 14

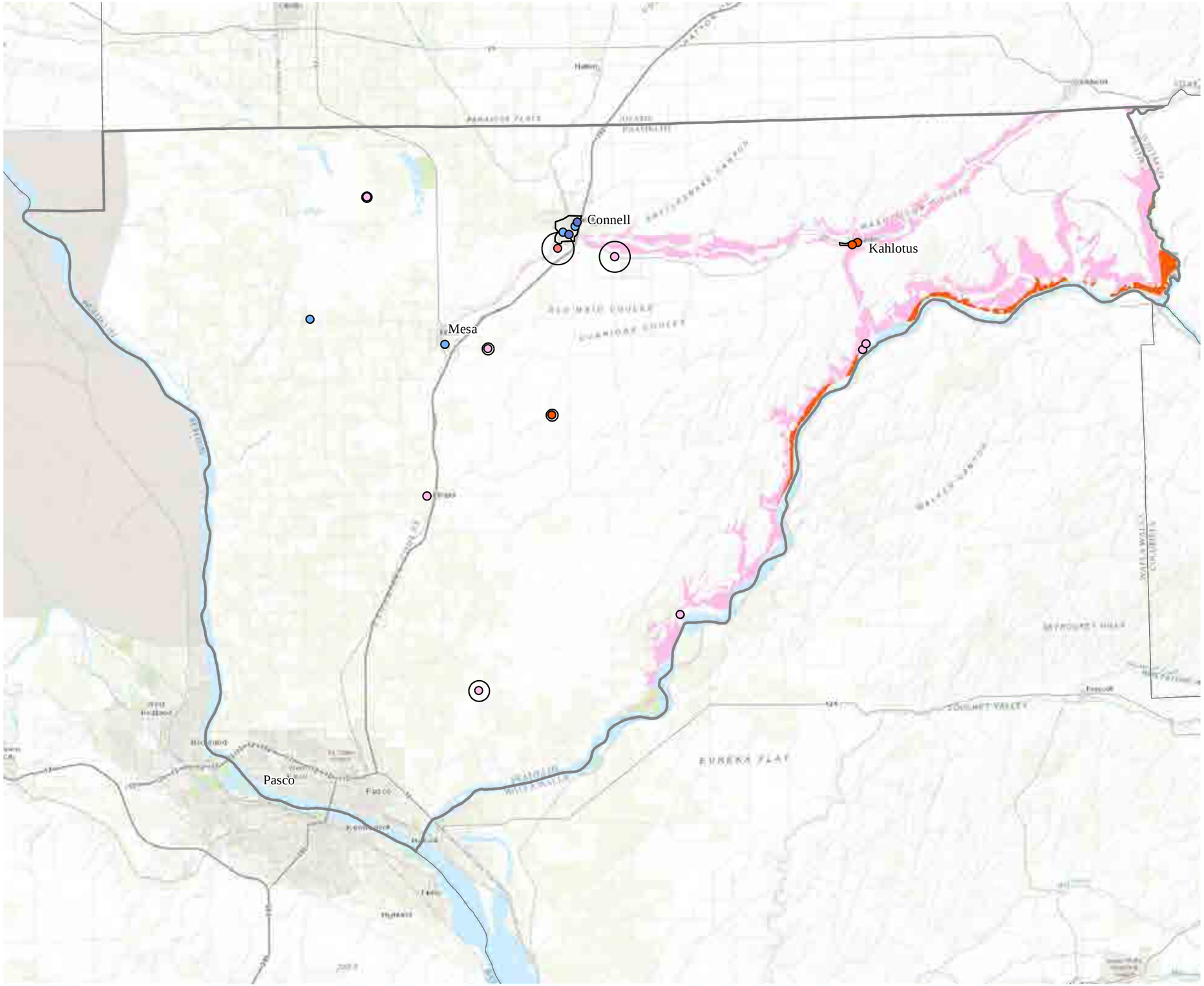
Miles

N

EA Engineering, Science, and Technology, Inc., PBC

Figure 6.

Lower Wanapum and Grande Ronde Basalt Outcrops and Public Water Supply Wells in Franklin County.



Legend

Public Water Supply Well Primarily Open to:

- Wanapum Basalt
- Wanapum Basalt and Upper Grande Ronde Basalt
- Frenchman Basalt
- Frenchman Basalt and Upper Grande Ronde Basalt
- Upper Grande Ronde Basalt
- WHPA TOT 10yr
- Frenchman Springs Member (Lower Wanapum Basalt)
- Upper Grande Ronde Basalt

0 3.5 7 14

Miles

N

EA Engineering, Science, and Technology, Inc., PBC

Attachment A

Hydrogeologic Setting Summary for Franklin County

This page intentionally left blank

Franklin County is located in the central portion of the Columbia River flood basalt province. The province comprises several hundred continental flood basalt flows collectively known as the Columbia River Basalt Group (CRBG), thin interbedded continental sedimentary units known as the Ellensburg Formation, and a thin discontinuous sequence of overlying continental sedimentary units, referred to as suprabasalt sediments. This section summarizes the basic hydrogeologic setting of Franklin County, and includes a discussion of the primary geologic units hosting the aquifer system (from youngest to oldest unit or shallowest to deepest), a brief summary of geologic structures which potentially influence groundwater occurrence, and a summary of basic aquifer system characteristics including recharge and discharge.

Geology

The basic geologic framework of the region is described in a number of reports, with Waters (1961), Mackin (1961), Grolier and Bingham (1971, 1978), Tolan et al. (1989, 2009), Smith et al. (1989), GWMA (2009a, 2011d), Burns et al. (2011), Kahle et al. (2011), and Reidel et al. (2013) all offering reviews, summaries, and/or detailed descriptions of many aspects of that framework, including the history and origin, physical composition, and hydrogeologic regimes of the CRBG and associated continental sedimentary units. The following is a summary derived from these and other reports as cited.

Suprabasalt Sediments

The youngest strata in Franklin County consist of a thin sequence of generally discontinuous continental sedimentary units deposited following the emplacement of the underlying CRBG. Based on surface geologic mapping in the County, suprabasalt sediment strata include recent wind-blown silt and sand, Quaternary alluvium, Pleistocene cataclysmic flood deposits, Pleistocene loess, and the Mio-Pliocene Ringold Formation and associated unnamed caliches. Basic characteristics of these units in the County are summarized in the following bullets:

- Recent (<12,000 years old) wind-blown silt and sand constitutes the thin (usually <5 feet thick) surface soils found throughout the County. In much of the County this horizon is being actively farmed. In the scabland coulees throughout the County, this horizon commonly is absent.
- Quaternary (˜2,500,000 years old to modern) alluvium consists of thin (<20 feet thick), discontinuous occurrences of silt, sand, and gravel derived from eroded basalt and reworked outburst flood deposits. Where present, Quaternary alluvium overlies outburst flood deposits, the Ringold Formation, and/or the CRBG.
- Pleistocene (˜2,500,000 to 12,000 years old) cataclysmic flood deposits, consisting predominantly of sand, cobbles and boulders are present in coulees and in the Snake River. These strata are mapped and identified as outburst deposits of glacial Lake Missoula. Where present in the County flood deposits are found in relatively thin (<30 feet), narrow, elongated tracts to the north, south, and southeast, and as a thin veneer overlying older units.
- Pleistocene loess consists of regionally widespread eolian (i.e., wind-blown) deposits of silt to very fine sand. These deposits are found at the surface commonly in the central portion and eastern portions of the County where not incised into by scabland coulees. In dryland farming areas it is the primary surficial unit. Its thickness is generally 50 feet or

less, although locally it can be over 100 feet thick. Loess is generally absent in scabland coulees and stream drainages.

- The Ringold Formation is a Miocene- to Pliocene-aged alluvial-lacustrine unit between approximately 8,500,000 and 3,000,000 years old which, in Franklin County, consists predominantly of weakly cemented siltstone and claystone (GWMA 2007, 2009a, 2011d) that characterizes the majority of the White Bluffs along the Columbia River and underlying sand and gravel. It is typically capped by a thin (less than 20 feet) layer of caliche (calcium carbonate-rich strata) near the ground surface. In White Bluffs it may be as much as 900 feet thick, while it thins to the east, commonly pinching out.

Memo Figures 2 and 3 shows the basic surface occurrence of these strata in the County.

Columbia River Basalt Group (CRBG)

The CRBG is laterally extensive, covering an area of more than 59,000 square miles (Tolan et al. 1989) and spanning parts of Washington, Oregon, and Idaho. Individual basalt flows that make up the CRBG occur as laterally widespread sheets that cover up to several thousand square miles each. The number of flows and overall CRBG thickness is greatest near the central portion of the Columbia Basin and least near its margins. In the Pasco Basin and Franklin County, the CRBG exceeds 10,000 feet thick.

In Franklin County, the CRBG is subdivided into three primary units, or formations, designated (from youngest to oldest) the Saddle Mountains Basalt, Wanapum Basalt, and Grande Ronde Basalt (GWMA, 2009a, 2011d; Swanson et al. 1979a, 1979b). These are further subdivided into several dozen members and several hundred flows. For this project we do not go into the member and flow unit detail, rather working within the context of the formations. CRBG units are summarized briefly in the following paragraphs.

The ***Saddle Mountains Basalt*** is exposed at the surface across much of the County. Unit thicknesses range between 180 and 800 feet in the southwestern part of the County and 0 to 150 feet thick in the northeastern part of the County. In many scabland coulees and the Snake River Canyon the Saddle Mountains Basalt is absent (Memo Figures 2 and 5). Generally it can be characterized as a shallow basalt unit having limited lateral continuity and extent.

The ***Wanapum Basalt*** underlies the entire county, although the upper portions of it, like the Saddle Mountains Basalt, has limited lateral continuity and extent. This is because its upper portions commonly are at or near the surface and is deeply incised into by scabland coulees and the Snake River canyon. Conversely, the lower portion of the Wanapum is widespread and laterally continuous, except in the immediate vicinity of Lower Monumental Dam (Memo Figure 6). Given these differences, for this project, we divide the Wanapum into an upper Wanapum Basalt unit (upper Wanapum) which generally corresponds to the Priest Rapids Member and Roza Member and a lower Wanapum Basalt unit (lower Wanapum) which generally corresponds to the Frenchman Springs Member.

The upper Wanapum comprises the uppermost CRBG strata across most of the county and where not covered by younger sediments it is exposed in scabland coulees and on uplifted highland areas. Memo Figure 5 shows that this especially common in the eastern part of the County. The deeper, more laterally continuous lower Wanapum is only found at the surface in the deepest

coulees and major uplifts, especially the Snake River canyon to the east (Memo Figure 6).

The Wanapum Basalt averages between ranges between 600 and 800 feet across most of its extent, although it thickens to approximately 1,000 feet to the south. Based on GWMA maps (GWMA 2009a, 2011d) the upper Wanapum (where present) constitutes approximately 20-30% of this total thickness, the lower Wanapum constitutes the remainder where the lower Wanapum is present.

The ***Grande Ronde Basalt*** also underlies the entire county. Grande Ronde Basalt outcrops are only found in the Snake River canyon near Lower Monumental Dam to the east. Its thickness beneath the County is not well known because no wells fully penetrate it (Burns et al. 2011; GWMA 2009a, 2011d; Kahle et al. 2011). Depths to the top of the Grande Ronde are greater than 1,600 feet in the deepest basins, including the Pasco Basin (GWMA 2009a, 2011d). The uppermost Grande Ronde unit underlying the County is the Sentinel Bluffs Member (GWMA 2009a, 2011d).

Sedimentary interbeds found between the various CRBG formations, members, and flow units beneath the County belong to the Ellensburg Formation. These sedimentary interbeds vary in nature and composition, typically ranging between 1 and 100 feet thick, and while widespread, they can be locally absent (GWMA 2009a, 2011d). Three Ellensburg Formation members are identified underlying the County, the Quincy Member (predominantly claystone separating the Priest Rapids and Roza Members of the Wanapum Basalt), the Squaw Creek Member (predominantly claystone separating the Roza and Frenchman Springs Members), and the Vantage Member (predominantly claystone separating the Wanapum and Grande Ronde Basalts).

Geologic Structure

Franklin County lies within the central portion of the Columbia Basin, a structural basin formed by regional subsidence and tectonic warping. Compressional and extensional tectonic stresses have led to the formation of regional fault and fold structures (e.g., anticlinal ridges and synclinal valleys) and four distinct structural subprovinces: Yakima Fold Belt, Blue Mountains, Palouse Slope, and the Clearwater Embayment (Myers and Price, 1979; Reidel et al. 1994). Two of these, the Yakima Fold Belt and the Palouse Slope occur in Franklin County.

The Yakima Fold Belt subprovince is characterized by a series of east-west-trending, anticlinal ridges, associated faults, and synclinal valleys. The most prominent of these features is the Saddle Mountains in the northern part of the County and a series of subdued buried structures in the southern part of the County. In the eastern parts of the County these structures become more subdued and transitions into the Palouse Slope subprovince.

The Palouse Slope subprovince in the eastern portion of the County is a regional slope that gently dips west-southwestward (GWMA 2009a, 2011d; Myers and Price 1979). The Palouse Slope is relatively undeformed compared to the Yakima Fold Belt and few faults have been mapped in this region (Tolan and Reidel 1989). Where mapped, deformation on the Palouse Slope is limited to low amplitude north- to northwest-trending and east-west-trending folds (Tolan and Reidel 1989).

Hydrogeology

The primary groundwater systems underlying Franklin County are found within the alluvial sediments overlying the CRBG and within the CRBG. The CRBG aquifer system also is commonly subdivided into systems hosted primarily by the Saddle Mountains Basalt, the Wanapum Basalt and the Grande Ronde Basalt (Ely et al. 2014). Further subdivisions of these basalt aquifer systems also have been suggested, such as the upper (Priest Rapids and Roza) and lower (Frenchman Springs) Wanapum (GWMA 2011e). Hydrologic characteristics of the CRBG and alluvial aquifer systems are summarized further in the following sections.

Alluvial Aquifer System

The alluvial aquifer (or suprabasalt sediment aquifer) system comprises all saturated sediments that overlie the CRBG and is sometimes termed the overburden aquifer (Hansen at al. 1994). In Franklin County, the alluvial aquifer is hosted primarily by fine grained Ringold Formation strata and coarser grained cataclysmic flood deposits. Loess, which also is a widespread alluvial unit (Figure 2) is not a significant water bearing unit in the County, and where it does host groundwater it is not productive because of its fine-grained texture.

The lateral extent and continuity of Ringold Formation and cataclysmic flood deposits and the aquifer system they host is effected by anticlinal ridges in the Yakima Fold Belt region, basalt bedrock scabland areas, and scabland coulees (GWMA 2007). As a result, groundwater in this system tends to be localized, has limited lateral extent, and does not serve as a major, widespread county water supply. Given that, this aquifer system can produce usable quantities of groundwater in the larger basins, such as the Pasco Basin, and in some scabland coulee areas near recharge sources. Groundwater occurring within the alluvial aquifer system is predominantly unconfined. Given that, surface recharge, where present, can easily reach this aquifer system.

Columbia River Basalt Aquifer System

The CRBG groundwater system in Franklin County is regional in scale. The physical characteristics and properties of individual CRBG flows affect their intrinsic hydraulic properties and influence potential distribution of groundwater within the CRBG. Based on both surface and subsurface data and mapping, CRBG flows are most commonly classified as sheet flows (Beeson and Tolan 1990, 1996; Beeson et al. 1985, 1989; Reidel 1998; Reidel et al. 1994; USDOE 1988). As these and other reports show, CRBG sheet flows exhibit a basic three-part internal arrangement of internal intraflow structures that originate during the emplacement and cooling of the lava flows. These features are referred to as the flow top, flow interior, and flow bottom. The combination of a flow top of one flow and the flow bottom of the overlying flow is commonly referred to as the “interflow zone.”

Groundwater within the CRBG aquifer system is typically confined and is stored and transmitted primarily in interflow zones. Where basalt flows are thick and laterally extensive there is little vertical hydraulic connectivity between interflow zones. Conversely, where basalt flows thin, pinch out, or are otherwise disrupted, the degree of hydraulic continuity between interflow zones commonly increases. Unconfined conditions may exist in permeable, uppermost portions of the basalt where exposed at the surface. The hydrogeology of the CRBG is discussed further in a number of reports, some of the more recent of which include (Ely et al. 2014; GWMA 2009c, 2011b, 2011e; Kahle et al. 2011).

Where not fractured by faults and folding, the basalts typically exhibit high horizontal and vertical hydraulic conductivities in the vesicular/fractured permeable interflow zones, and low horizontal and vertical hydraulic conductivities in the dense flow interiors. Basalt flow interiors exhibit much lower hydraulic conductivities compared to the interflow zones, generally 6 to 9 orders of magnitude less than those displayed by interflow zones (Reidel et al. 2002; USDOE 1988).

Groundwater Movement

Groundwater flow direction within basalt units exposed at the surface generally follows the land surface, flowing from topographic and structural uplands down-dip to low-lying areas. In the Palouse Slope area of the County, groundwater in the Wanapum and Grande Ronde Formations flows toward the southwest (GWMA 2009c, 2011e; Hansen et al. 1994), generally following the slope's regional dip. At depth, groundwater flow is less controlled by surface topography and is more generally down-dip to the south toward the Columbia and Snake Rivers (GWMA 2009c, 2011e; Hansen et al. 1994). Sediments interbedded within the basalt can either enhance or inhibit groundwater flow.

Groundwater flow directions in saturated portions of the alluvial aquifer system would be expected to generally follow the land surface and discharge to surface drainage features or underlying basalt units. Alluvial aquifers tend to be localized by the numerous basalt outcrops that truncate these strata. Downward movement would be largely controlled by alluvial aquifer heterogeneities (e.g., cemented zones, caliche, and fine-grained overbank flood deposits) and the distribution of open joints and fractures in the underlying upper portions of the basalt aquifer system.

Fault/fold structures may present either barriers to groundwater movement or zones of enhanced groundwater flow (GWMA 2009c, 2011b, 2011e). The major structural feature found in the Yakima Fold Belt portion of the County is the Saddle Mountains. This structure is likely to significantly influence groundwater occurrence and movement in the CRBG aquifer system. Folding and faulting in that structure may cause reduced porosity and permeability through compression and destruction of basalt interflow zones, forming partial or complete barriers to groundwater movement.

Recharge and Discharge

Recharge to the basalt and alluvial aquifer systems is primarily from infiltration of precipitation, irrigation seepage, and irrigation return flow. The basalt aquifer system is recharged via more permeable sections of the basalt flows including vesicles, vertical joints, fractures and permeable interflow pathways. According to Hansen et al. (1994) groundwater recharge in the central Columbia Basin can range from as low as zero where annual precipitation is less than 8 inches to several inches per year in heavily irrigated areas. Recharge in excess of 30 inches per year may occur in mountainous areas surrounding the Columbia Basin. Given the location of Franklin County in the central Columbia Basin, natural groundwater recharge is interpreted to be relatively small, to absent. Modern irrigation sourced recharge probably occurs across much of the County given the wide extent of irrigating agriculture. GWMA groundwater geochemical data though indicates that many existing deep basalt aquifer wells in the area receive essentially none of this type of water (GWMA 2009b, 2009d, 2011a, 2011c, 2012, 2013). This work showed that deep aquifer groundwater in the region is characterized by increasing

(Na+K)/(Na+K+Ca+Mg) ratios, decreasing percent modern carbon, suggesting slow recharge and long residence times for groundwater in these portions of the CRBG aquifer system.

Discharge from the basalt and alluvial aquifer systems is generally toward topographic and structural lows, such as down dip in syncline axes and towards streams and lakes (Ely et al. 2014; Kahle et al. 2011). Shallow basalts commonly discharge to coulees while deeper units predominantly discharge into these structural lows. The alluvial system can also discharge to and be a recharge source for the underlying basalts, primarily in areas where the suprabasalt deposits overlying the basalt are highly permeable and where the nature of the underlying basalt favors infiltration.

Irrigation has influenced the surface hydrology of the area, causing localized increases in groundwater recharge and contributions to base flows in streams and irrigation waste ways. Intensive application of irrigation water in the region causes peak surface water flows (and groundwater recharge) to occur mostly during the summer with base flows from groundwater discharge contributions taking place mostly during the winter (Williamson et al. 1998). The hydraulic connection between surface water and groundwater would likely be greater in drainages situated in the alluvial or outburst flood deposits compared to those incised in the less permeable loess or Ringold formation deposits. Shallow pumping could induce recharge from surface water to groundwater in these areas or in permeable alluvial/outburst deposits adjacent to perennial streams. Low-permeability conditions underlying or within the suprabasalt deposits or within the basalt flow interiors would separate and confine deeper groundwater aquifers from surface water bodies.

Groundwater Quality

Basalt groundwater is generally reducing, having very low levels of dissolved oxygen and negative oxidation-reduction potential. Also, GWMA geochemical sampling showed that shallower portions of the CRBG aquifer system have lower (Na+K)/(Na+K+Ca+Mg) ratios than deeper portions of the system (GWMA 2009c, 2011a, 2011b, 2011c, 2012). This work showed that deep aquifer groundwater in the region is characterized by increasing, decreasing percent modern carbon, suggesting slow recharge and long residence times for groundwater in these portions of the CRBG aquifer system. Common water quality constituents in basalt groundwater that often exceed primary state standards include fluoride, iron, and manganese.

Isotope chemistry data coupled with carbon-14 age dating suggest that deep aquifer basalt groundwater is generally greater than 30,000 years old (GWMA 2009b, 2009c, 2009d, 2011a, 2011c, 2013; Reidel et al. 2002). GWMA geochemical data from City of Connell wells indicate that mixed ancient, or fossil, and modern groundwater sources are dominant, having average groundwater ages in excess of 3,000 years (GWMA 2012).

Given the widespread occurrence of farming in the region, fertilizer application and irrigation can cause high nitrate and pesticide concentrations in the aquifer systems. Shallow domestic wells generally have higher concentrations of nitrate (some exceeding 10 mg/L) and detections of pesticides than deeper wells (Williamson et al. 1998). Such groundwater quality conditions generally limit utilization of shallow groundwater sources, and most drinking water comes from deeper wells. Farming practices can also contribute nutrients (e.g., ammonia, nitrate, and phosphorus), pesticides, and soil runoff to surface water bodies (Williamson et al. 1998).

References

Beeson, M.H. and Tolan, T.L., 1990, The Columbia River Basalt Group in the Cascade Range – A middle Miocene reference datum for structural analysis: Journal of Geophysical Research, v. 95, p. 19547-19559.

Beeson M.H. and Tolan, T.L., 1996, Field trip guide to Columbia River Basalt intracanyon flows in western Oregon and Washington – Ginkgo, Rosalia, and Pomona flows: Portland, Oregon, Cordilleran Section meeting, Geological Society of America, 35 p.

Beeson, M.H., Fecht, K.R., Reidel, S. P., and Tolan, T.L., 1985, Correlations within the Frenchman Springs Member of the Columbia River Basalt Group: New insights into the Miocene tectonics of northwest Oregon: Oregon Geology, v. 47, p. 87-96.

Beeson, M.H., Tolan, T.L., and Anderson, J.L., 1989, The Columbia River Basalt Group in western Oregon: Geologic structures and other factors that controlled flow emplacement patterns, in Reidel, S.P. and Hooper, P.R., eds., Volcanism and tectonism in the Columbia River Flood-Basalt Provence: Geological Society of America Special paper 239, p. 223-246.

Burns, E.R., Morgan, D.S., Peavler, R.S., and Kahle, S.C., 2011, Three-dimensional model of the geologic framework for the Columbia Plateau Regional Aquifer System, Idaho, Oregon, and Washington: U.S. Geological Survey Scientific Investigations Report 2010-5246, 44p., accessed March 1, 2011, at http://pubs.usgs.gov/sir/2010/5246/.

Ely, D.M., Burns, E.R., Morgan, D.S., and Vaccaro, J.J., 2014, Numerical Simulation of Groundwater Flow in the Columbia Plateau Regional Aquifer System, Idaho, Oregon, and Washington: U.S. Geological Survey Scientific Investigations Report 2014-5127, 89 p.

Grolier, M.J., and Bingham, J.W., 1971, Geologic Map and Sections of Part of Grant, Adams, and Franklin Counties, Washington, U.S. Geological Survey Miscellaneous Geologic Investigations Series Map I-589, scale 1:62,500.

Grolier, M.J., and Bingham, J.W., 1978, Geology of Parts of Grant, Adams, and Franklin Counties, East-Central Washington, Washington State Department of Natural Resources, Division of Geology and Earth Resources, Bulletin No. 71.

GWMA, 2007, Geologic Framework of the Suprabasalt Sediment Aquifer System Columbia Basin Ground Water Management Area of Adams, Franklin, Grant and Lincoln Counties, Washington, Rev. 1. Prepared by GSI Water Solutions, Inc. and Franklin Conservation District.

GWMA, 2009a, Geologic framework of selected sedimentary and Columbia River Basalt Group units in the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, Edition 3: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by GSI Water Solutions, Inc. and the Franklin County Conservation District, June 2009.

GWMA, 2009b, Groundwater geochemistry of the Columbia River Basalt Group aquifer system

– Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by S.S. Papadopoulos and Associates, Inc. and GSI Water Solutions, Inc., June 2009.

GWMA, 2009c, Groundwater level declines in the Columbia River Basalt Group and their relationship to mechanisms for groundwater recharge: A conceptual groundwater system model for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by GSI Water Solutions, Inc., June 2009.

GWMA, 2009d, Multiple tracer study of recharge mechanisms and the age of groundwater in the Columbia River Basalt Group aquifer system – Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by S.S. Papadopoulos and Associates, Inc. and GSI Water Solutions, Inc., July 2009.

GWMA, 2011a, A summary of hydrochemical evidence for groundwater compartmentalization and modern recharge within the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by GSI Water Solutions, Inc. and S.S. Papadopoulos and Associates, Inc., June 2011.

GWMA, 2011b, Evidence for hydrogeologic compartmentalization in the Columbia River Basalt aquifer system, Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by GSI Water Solutions, Inc., June 2011.

GWMA, 2011c, Geochemical tracer modeling of groundwater recharge, ages, and mixing in Columbia River basalt aquifers: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by Anchor QEA, LLC, June 2011.

GWMA, 2011d, Geologic framework of selected sedimentary and Columbia River Basalt Group units in the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, Edition 4: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by GSI Water Solutions, Inc. and the Franklin County Conservation District, June 2011.

GWMA, 2011e, Groundwater flow model of the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln

Counties, Washington, prepared by GSI Water Solutions, Inc., S.S. Papadopoulos and Associates, Inc., and the Franklin County Conservation District, June 2011.

GWMA, 2012, Columbia Basin Ground Water Management Area Municipal Groundwater Supply Review: Current Conditions and Predicted Future Conditions: Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by GSI Water Solutions, Inc. and S.S. Papadopoulos and Associates, Inc., October, 2012.

GWMA, 2013, Modern Irrigation Sourced Recharge to the Basalt Aquifer system in the vicinity of the East Low Canal: An evaluation of potentially sustainable groundwater pumping in the central Columbia Basin and the Odessa Ground Water Management Subarea (Odessa Subarea): Consultant report prepared for the Columbia Basin Ground Water Management Area of Adams, Franklin, Grant, and Lincoln Counties, Washington, prepared by GSI Water Solutions, Inc. and the Franklin County Conservation District, March, 2013.

Hansen, A.J., Jr., Vaccaro, J.J., and Bauer, H.H., 1994, Ground-water flow simulation of the Columbia Plateau regional aquifer system, Washington, Oregon, and Idaho: U.S. Geological Survey, Water-Resources Investigations Report 91-4187, 81 p., 15 sheets.

Kahle, S.C., Morgan, D.S., Welch, W.B., Ely, D.M., Hinkle, S.R., Vaccaro, J.J., and Orzol, L.L., 2011, Hydrogeologic framework and hydrologic budget components of the Columbia Plateau Regional Aquifer System, Washington, Oregon, and Idaho: U.S. Geological Survey Scientific Investigations Report 2011-5124, 66 p.

Mackin, J.H., 1961, A Stratigraphic Section in the Yakima Basalt and Ellensburg Formation in south-central Washington: Washington Division of Mines and Geology Reports of Investigations 19, 45 p.

Myers, C.W. and Price, S.M., eds., 1979, Geologic studies of the Columbia Plateau: A Status Report: RHO-BWI-ST-4, Rockwell Hanford Operations, Richland, Washington.

Reidel, S.P., 1998, Emplacement of Columbia River flood basalt: Journal of Geophysical Research, v. 103, p. 27,393-27,410, doi: 10.1029/97JB03671.

Reidel, S.P., Campbell, N.P., Fecht, K.R., and Lindsey, K.A., 1994, Late Cenozoic structure and stratigraphy of south-central Washington, in, Lasmanis, R., and Cheney, E.S., eds., Regional Geology of Washington State: Washington Department of Natural Resources, Division of Geology and Earth Resources Bulletin 80, p. 159-180.

Reidel, S.P., Johnson, V.G., and Spane, F.A., 2002, Natural Gas Storage in Basalt Aquifers of the Columbia Basin, Pacific Northwest USA: A Guide to Site Characterization, Pacific Northwest National Laboratory, Richland, Washington.

Reidel, S.P., Camp, V.E., Tolan, T.L., and Martin, B.S., 2013, The Columbia River flood basalt province: Stratigraphy, aerial extent, volume, and physical volcanology, In Reidel, S.P., Camp, V.E., Ross, M.E., Wolff, J.A., Martin, B.S., Tolan, T.L., and Wells, E.E., eds., The Columbia River Flood Basalt Province: Geological Society of America Special Paper 497, p. 1-43.

Smith, G.A., Bjornstad, B.N., and Fecht, K.R., 1989, Neogene Terrestrial Sedimentation on and Adjacent to the Columbia Plateau, Washington, Oregon, and Idaho, in, Reidel, S.P., and Hooper, P.R., eds., Volcanism and tectonism in the Columbia River flood-basalt province: Geological Society of America Special Paper 239, p. 187-198.

Swanson, D.A., Wright, T.L., Hooper, P.R., and Bentley, R.D., 1979a, Revision in the Stratigraphic Nomenclature of the Columbia River Basalt Group, U.S. Geological Survey Bulletin 1457-G, 59 p.

Swanson, D.A., Anderson, J.L., Bentley, R.D., Camp, V.E., Gardner, J.N., and Wright, T.L., 1979b, Reconnaissance Geologic Map of the Columbia River Basalt Group in Washington and adjacent Idaho: U.S. Geological Survey Open-File Report 79-1363, scale 1:250,000.

Tolan, T.L. and Reidel, S.P., 1989, (compilers), Structure map of a portion of the Columbia River Flood-Basalt province, in Volcanism and Tectonism in the Columbia River Flood-Basalt Province, Special Paper 239, edited by Reidel, S.P and Hooper, P.R., pp. 1-20, Geological Society of America, Boulder, Colorado.

Tolan, T.L., Reidel, S.P., Beeson, M.H., Anderson, J.L., Fecht, K.R., Swanson, D.A., 1989, Revisions to the Estimates of the Aerial Extent and Volume of the Columbia River Basalt Group, in Volcanism and Tectonism in the Columbia River Flood-Basalt Province, Special Paper 239, edited by Reidel, S.P and Hooper, P.R., pp. 1-20, Geological Society of America, Boulder, Colorado.

Tolan, T.L., Martin, B.S., Reidel, S.P., Anderson, J.L., Lindsey, K.A., and Burt, W., 2009, An introduction to the stratigraphy, structural geology, and hydrogeology of the Columbia River Flood-Basalt Province: A primer for the GSA Columbia River Basalt Group field trips, *in* O'Connor, J.E., Dorsey, R.J., and Madin, I.P., eds., Volcanoes to Vineyards: Geologic Field Trips through the Dynamic Landscape of the Pacific Northwest: Geological Society of America Field Guide 15, p. 599-643, doi: 10.1130/2009.fld015(28).

USDOE (U.S. Department of Energy), 1988, Site characterization plan, Reference Repository Location, Hanford Site, Washington - consultation draft: Washington, D.C., Office of Civilian Radioactive Waste Management, DOE/RW-0164, v. 1 - 9.

Waters, A.C., 1961, Stratigraphic and Lithologic Variations in Columbia River Basalt: American Journal of Science, v. 259, p. 583-611.

Williamson, K.A., Munn, M.D., Ryker, S.J., Wagner, R.J., Ebbert, J.C., and Vanderpool, A.M., 1998, Water Quality in the Central Columbia Plateau, Washington and Idaho, 1992-95, U.S. Geological Survey Circular 1144.

Appendix C
Benchmarks – Methods and Initial Results

APPENDIX C: Benchmarks – Methods and Initial Results

Methods

Linking Stewardship Practices to Resource Protection

Conservation practice benefits are related to critical areas functions and values through the use of the national conservation practice physical effect (CPPE) scores for each practice developed by U.S. Department of Agriculture (USDA; NRCS 2017). The CPPE describes how Natural Resources Conservation Service (NRCS) practices affect the human-economic environment (e.g., Agricultural Viability) and natural resources (e.g., Critical Functions). CPPE, developed by USDA NRCS economists, helps field planners describe in detail how each practice affects agricultural viability and natural resource critical functions. Scores range between +5 and -5, with positive scores denoting a functional beneficial effect, 0 denoting no effect, and negative scores having an adverse effect.

For each of the four key critical area functions (i.e., water quality, hydrology, soil health, and habitat), resource concerns were tailored to Franklin County by including concerns applicable to the County and were averaged together to provide an overall function score. Where a resource concern was listed as not applicable to a particular practice, this resource concern was not factored into the average function score. Table 1 and Attachments 1 and 2 provide additional details on methods applied to summary tables of practice effects on resource function in Franklin County:

- **Table 1: CPPE Resource Concerns for Franklin County** summarizes the resource concerns identified as applicable to Franklin County conditions, pared down for applicability from the comprehensive list of resource concerns in the NRCS National CPPE Summary Tool, dated 7/28/2015 and available from the NRCS CPPE webpage (NRCS 2017) at https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/econ/data/?cid=nrcs143_009740.
- **Attachment 1: Franklin County CPPE Resource Concerns and Scores** provides a detailed summary of applicable individual resource scores (identified in Table 1) and average function scores per key critical area function for all NRCS conservation practices. Resource concerns listed as a zero (and colored in red) indicate the score is applicable to the conservation practice as having no effect. Zero scores not highlighted in red indicate a resource concern that is not applicable to the practice and is therefore not factored into the average function score.
- **Attachment 2: Franklin County Practice Toolbox with CPPE Averaged Function Scores** provides an overview of NRCS conservation practices currently implemented in Franklin County, showing quantitative scores and additional applicable and key practices (scores greater than 3) for each function category.

Table 1
CPPE Resource Concerns for Franklin County

Function	Resource Concern
Soil Health	The soil function score averaged both soil erosion and soil condition scores based on the associated resource concerns listed below.
Soil Erosion	• Sheet and rill • Wind • Ephemeral gully • Classic gully • Streambank/shoreline/conveyance
Soil Condition	• Organic matter depletion • Compaction • Subsidence • Contaminants: Salts or other chemicals
Hydrology	• Excessive seepage • Excessive runoff, flooding, or ponding • Excessive subsurface water • Drifted snow • Inefficient water use on irrigated land • Inefficient water use on non-irrigated land
Water Quality	• Pesticides in surface water • Pesticides in groundwater • Nutrients in surface water • Nutrients in groundwater • Salts in surface water • Salts in groundwater • Excess pathogens and chemicals from manure, bio-solids, or compost applications in surface water • Excess pathogens and chemicals from manure, bio-solids, or compost applications in groundwater • Excessive sediments in surface water • Elevated water temperature • Petroleum, heavy metals, and other pollutants transported to surface water • Petroleum, heavy metals, and other pollutants transported to groundwater
Habitat	• Inadequate food • Inadequate cover/shelter • Inadequate water • Inadequate space

Application for Future Practices

The spreadsheets in Attachments 1 and 2 may be used to track enrollment in future practices and to continue to assess functional indicators of these practices. New NRCS practices may also be added to Franklin County's palette of protection and enhancement tools (Attachment 2).

For practices outside of NRCS, equivalent function scores should be developed to estimate the benefit or impact on soil health, hydrology, water quality, and habitat based on the understanding that scores range from +5 and -5, with positive scores denoting a beneficial effect and negative scores indicating an impact. The following steps are suggested for this process:

- Assessing whether the new practice is similar to existing NRCS practices and using the resource concern scores from the existing NRCS practice as a starting point to develop function scores
- Use experience and available technical information to develop scores, with the understanding that although a practice may have a beneficial effect on a target resource, there may be impacts to other resources. Also, not all practices will have an effect on all possible resource concerns; many will have no effect, and some will not be applicable and should be listed as a zero.

Initial Results (2011 to 2016)

To track performance from implemented conservation practices from 2011 to 2016, enrollment in conservation practices was tabulated and average function scores (Attachment 2) were applied. This provided a functional indicator that accounted for the beneficial and adverse effects of each practice.

Although NRCS enrollment data are available since 2011, the discontinuation of practices during that period was not recorded. The rate of discontinuation of practices often varies based on whether implemented practices involve stewardship investment (e.g., irrigation management systems), stewardship actions (e.g., cover cropping), or permanent conversion into conservation easements. Table 2 summarizes the proposed approach to account for the varied disenrollment rates based on some of these categories of practices.

Table 2
Calculating Disenrollment for Conservation Practices

Assumed Range of Disenrollment/ Discontinuation	Conservation Practice Category	Example Practices
None	**Easements and Infrastructure** • Permanent conservation practices	• Permanent easements • Major infrastructure
Lower 0 to 2%	**Conservation Investments** • High barriers to entry/exit – Conservation investments – Maintenance cost – Effectiveness • Increases land productivity • Lowers cost	• Tillage management • Pest management • Nutrient management • Irrigation management • Fencing
Higher 0 to 6%	**Conservation Actions** • Low barriers to entry/exit – Easily removed • Reduced land in production • Rotational use – Market driven rotation • Reliance on unstable conservation funding or incentives (e.g., Conservation Resource Program)	• Habitat restoration • Prescribed grazing • Cover crop • Range planting

Figures 1 through 4 illustrate the functional indicator results from 2011 to 2016 based on reported practices enrolled/implemented and estimated discontinuation of practices within that time period. Figures 1 through 4 indicate a net gain in function over time for soil health, hydrology, water quality, and habitat.

Figure 1
Water Quality Functional Indictors: 2011 to 2016 NRCS Practice Enrollments

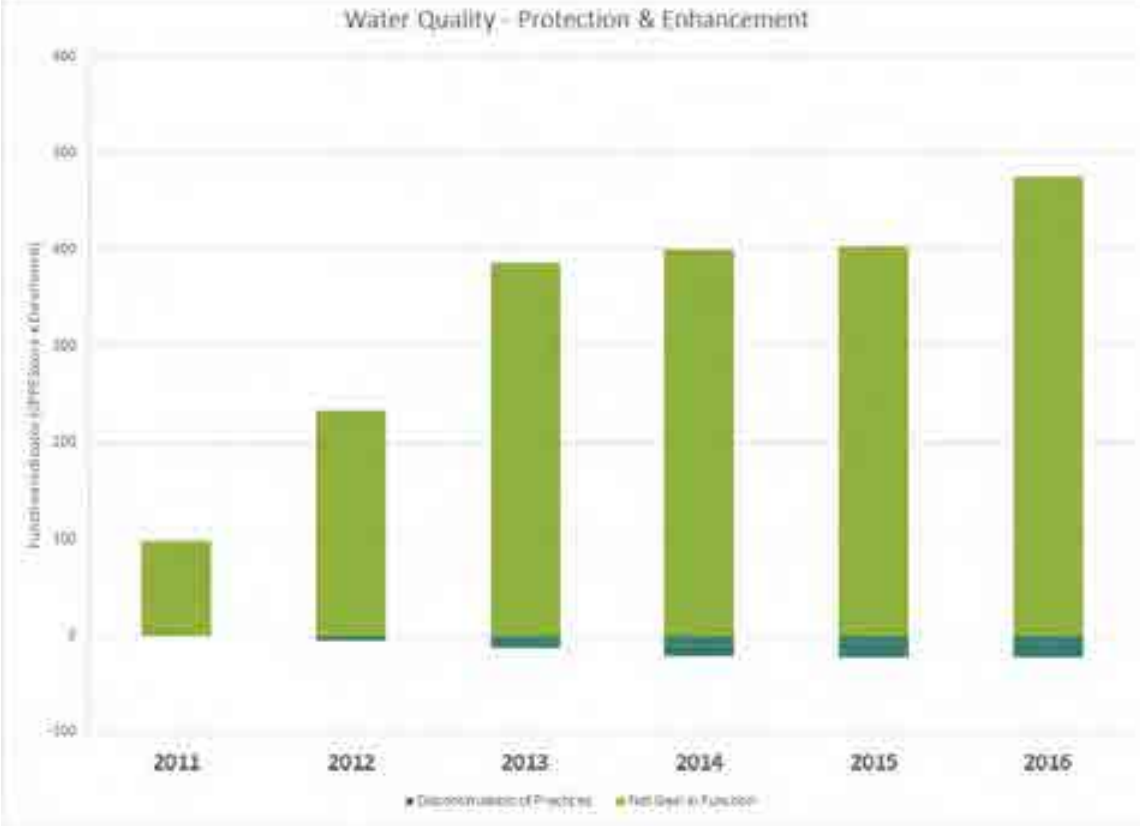


Figure 2
Hydrology Functional Indictors: 2011 to 2016 NRCS Practice Enrollments

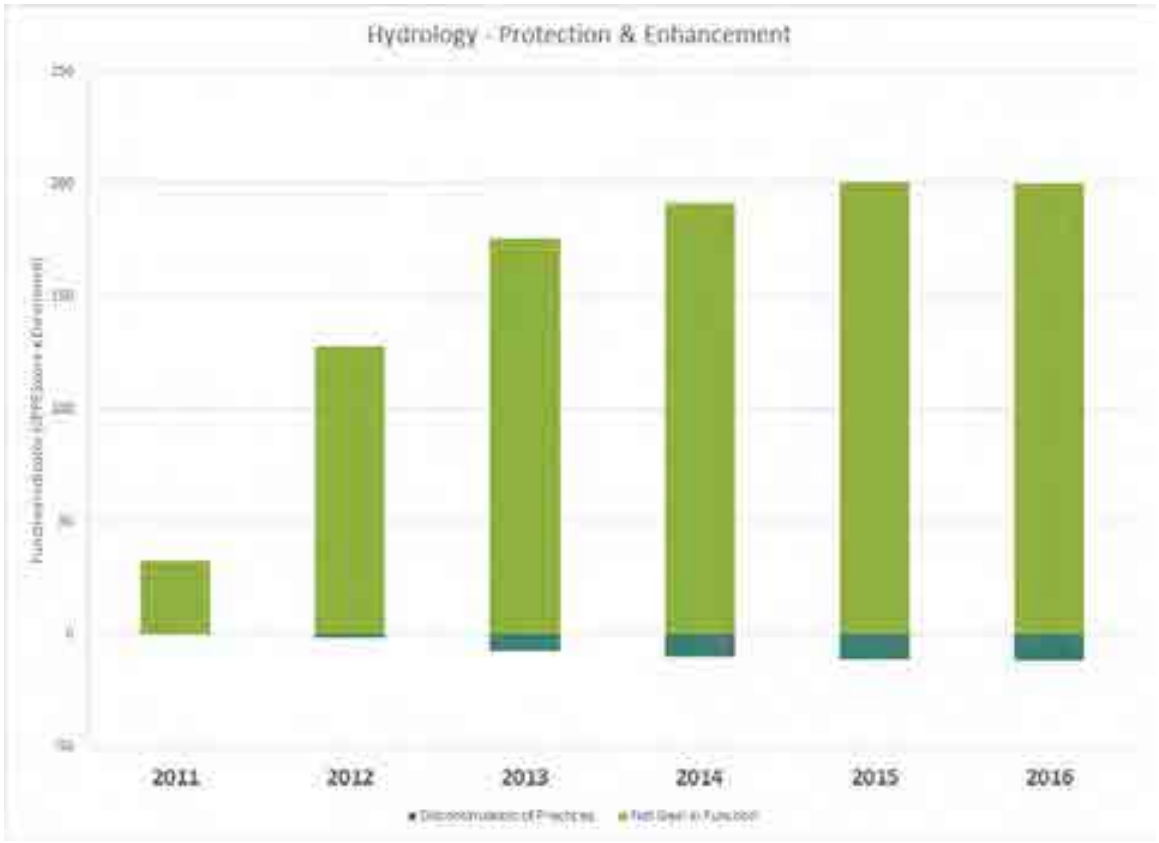


Figure 3
Soil Health Functional Indictors: 2011 to 2016 NRCS Practice Enrollments

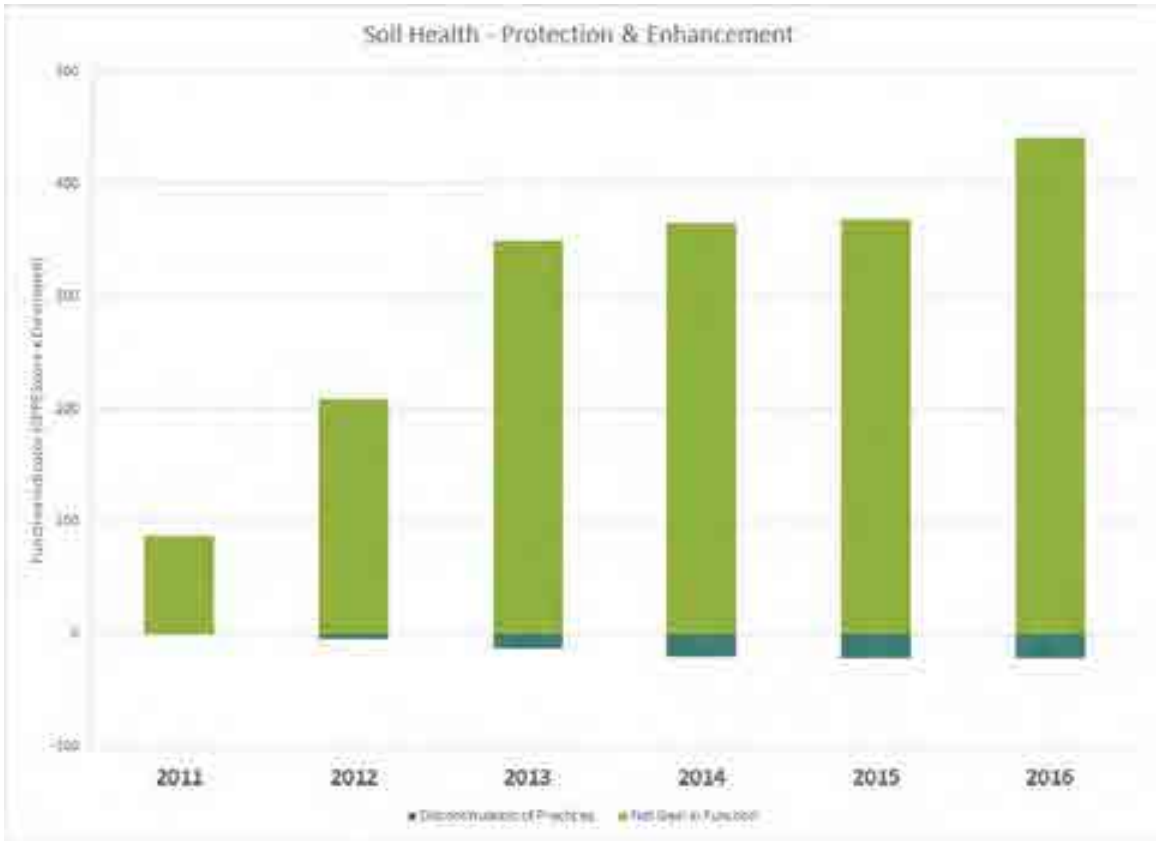
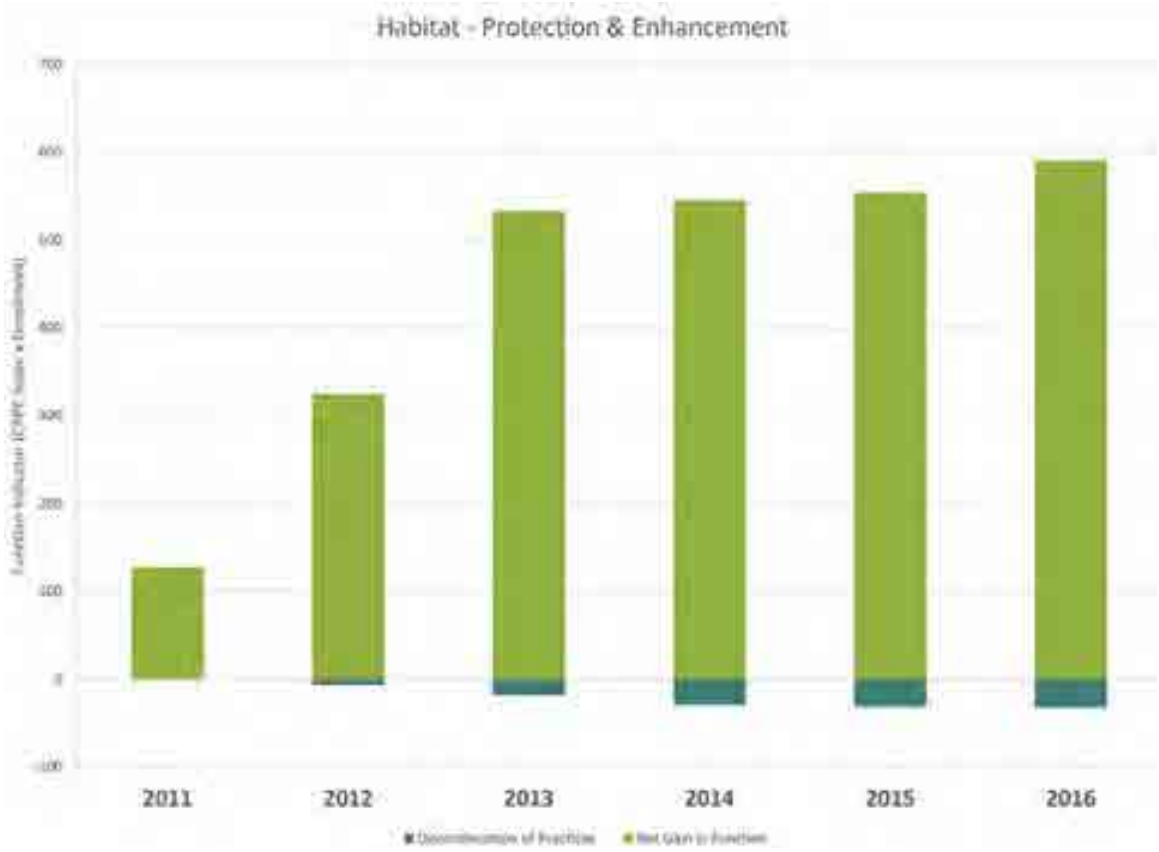


Figure 4
Habitat Functional Indictors: 2011 to 2016 NRCS Practice Enrollments



Reference

NRCS (Natural Resources Conservation Service), 2017. NRCS Conservation Practice Physical Effects CPPE|NRCS Economics. Cited March 2017. Available from: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/econ/data/?cid=nrcs143_009740.

Appendix C Attachment 1
Franklin County CPPE Resource Concerns and Scores

Franklin County VSP Work Plan	Code	Soil Erosion – Sheet and Rill	Soil Erosion – Wind	Soil Erosion – Ephemeral Gully	Soil Erosion – Classic Gully	Soil Erosion – Streambank/ Shoreline/ Conveyance	Soil Erosion Average	Soil Condition – Organic Matter Depletion	Soil Condition – Compaction	Soil Condition – Subsidence	Soil Condition – Contaminants: Salts or Other Chemicals	Soil Condition Average	Water Quantity – Excessive Seepage	Water Quantity – Excessive Runoff, Flooding, or Ponding	Water Quantity – Excessive Subsurface Water	Water Quantity – Drifted Snow	Water Quantity – Inefficient Water Use on Irrigated Land	Water Quantity – Inefficient Water Use on Nonirrigated Land	Hydrology Average	Water Quality Degradation - Pesticides in Surface Water	Water Quality Degradation - Pesticides in Groundwater	Water Quality Degradation - Nutrients in Surface water	Water Quality Degradation - Nutrients in Groundwater	Water Quality Degradation - Salts in Surface Water	Water Quality Degradation - Salts in Groundwater	Water Quality Degradation - Excess Pathogens and Chemicals from Manure, Bio-solids or Compost Applications in Surface Water	Water Quality Degradation - Excess Pathogens and Chemicals from Manure, Bio-solids or Compost Applications in Groundwater	Water Quality Degradation - Excessive Sediment in Surface Water	Water Quality Degradation - Elevated Water Temperature	Water Quality Degradation - Petroleum, Heavy Metals and Other Pollutants Transported to Surface Water	Water Quality Degradation - Petroleum, Heavy Metals and Other Pollutants Transported to Groundwater	Water Quality Average	Fish and Wildlife – Inadequate Food	Fish and Wildlife – Inadequate Cover/Shelter	Fish and Wildlife – Inadequate Water	Fish and Wildlife – Inadequate Space	Habitat Average	Wetlands	Fish/Wildlife Habitat Conservation Areas	Critical Aquifer Recharge Areas	Geologically Hazardous Areas (Erosion)	Frequently Flooded Areas
Access Control	472	3	1	4	4	5	3.40	1	4	0	0	2.50	1	1	2	0	0	3	1.75	1	0	1	1	0	0	1	1	3	3	1	1	1.44	3	3	1	1	2.00	1.73	2.00	0.60	3.40	2.22
Access Road	560	1	0	1	1	0	1.00	0	2	0	0	2.00	0	1	0	0	2	0	1.50	0	0	0	0	0	0	0	0	1	0	0	0	1.00	0	0	0	-1	-1.00	0.50	-1.00	0.00	1.00	0.90
Agrichemical Handling Facility	309	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	5	5	5	5	0	0	0	0	0	0	0	0	5.00	0	0	0	0	0.00	1.67	0.00	2.00	0.00	1.00
Air Filtration and Scrubbing	371	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Alley Cropping	311	5	5	5	3	0	4.50	5	2	0	1	2.67	1	1	2	3	3	0	2.00	3	1	3	1	1	1	3	1	3	0	1	1	1.73	2	2	0	3	2.33	2.02	2.33	1.00	4.50	2.65
Amending Soil Properties with Gypsum Products	333	1	1	0	0	0	1.00	1	0	0	1	1.00	0	1	0	0	1	0	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	0.33	0.00	0.00	1.00	0.60
Amendments for Treatment of Agricultural Waste	591	0	0	0	0	0	0.00	1	0	0	0	0.50	0	0	0	0	1	0	0.50	0	0	2	2	2	2	2	2	0	0	2	2	2.00	0	0	0	0	0.00	0.83	0.00	1.60	0.00	0.60
Anaerobic Digester	366	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	2	0	0	0	2	0	0	0	0	0	0.67	0	0	0	0	0.00	0.22	0.00	0.00	0.00	0.13
Animal Mortality Facility	316	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	2	2	0	0	2	2	0	0	0	0	2.00	0	0	0	0	0.00	0.67	0.00	0.80	0.00	0.40
Anionic Polyacrylamide (PAM) Erosion Control	450	2	2	2	0	0	2.00	0	2	0	0	2.00	0	0	0	0	1	1	1.00	2	-1	2	-1	0	0	0	0	4	0	1	0	1.17	0	0	0	0	0.00	0.72	0.00	-0.40	2.00	1.23
Aquaculture Ponds	397	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	-2	-2	0	0	-2	0	0	-2	0	0	-2.00	0	0	1	0	1.00	-0.33	1.00	-0.40	0.00	-0.20
Aquatic Organism Passage	396	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	2	0	0	2.00	0	2	1	5	2.67	1.56	2.67	0.00	0.00	0.93
Bedding	310	2	0	0	0	0	2.00	-1	-1	0	1	-0.33	0	5	0	0	0	-1	2.00	-2	1	-2	1	-2	1	-2	1	-1	0	-2	1	-0.55	0	0	0	0	0.00	0.48	0.00	1.00	2.00	0.62
Bivalve Aquaculture Gear and Biofouling Control	400	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	2	0	0	0	2	0	0	0	0	0	2.00	0	0	2	0	2.00	1.33	2.00	0.00	0.00	0.80
Brush Management	314	1	1	1	1	0	1.00	0	0	0	0	0.00	0	1	0	0	0	2	1.50	-1	0	0	0	0	0	0	0	2	0	0	0	0.50	2	2	0	1	1.67	1.22	1.67	0.00	1.00	0.93
Building Envelope Improvement	672	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Channel Bed Stabilization	584	0	0	0	2	2	2.00	0	0	0	0	0.00	2	0	0	0	0	0	2.00	0	0	0	0	0	0	0	0	1	1	0	0	1.00	1	1	1	2	1.25	1.42	1.25	0.00	2.00	1.25
Clearing & Snagging	326	0	0	0	0	2	2.00	0	0	0	0	0.00	0	2	0	0	0	0	2.00	0	0	0	0	0	0	0	0	-2	-1	0	0	-1.50	-2	-2	-1	-2	-1.75	-0.42	-1.75	0.00	2.00	0.15
Combustion System Improvement	372	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Composting Facility	317	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	2	2	0	0	2	2	0	0	0	0	2.00	0	0	0	0	0.00	0.67	0.00	0.80	0.00	0.40
Conservation Cover	327	4	5	2	2	2	3.00	5	3	0	2	3.33	1	2	1	1	0	2	1.40	3	3	4	4	5	2	1	2	4	0	0	0	3.11	4	4	0	2	3.33	2.61	3.33	2.20	3.00	2.84
Conservation Crop Rotation	328	4	4	0	0	0	4.00	4	1	0	2	2.33	1	2	1	0	2	2	1.60	2	2	2	2	1	2	1	0	2	0	0	0	1.75	2	2	0	2	2.00	1.78	2.00	1.20	4.00	2.34
Constructed Wetland	656	0	0	0	0	0	0.00	0	0	0	0	0.00	0	2	0	0	0	0	2.00	2	1	4	1	1	1	4	3	5	0	4	1	2.25	3	3	0	2	2.00	2.08	2.00	1.40	0.00	1.25
Contour Buffer Strips	332	3	0	0	0	0	3.00	2	0	0	0	2.00	-2	1	-1	0	0	0	-0.67	2	0	2	-1	1	-1	1	-1	2	0	0	0	0.56	2	2	0	2	2.00	0.63	2.00	-0.60	3.00	1.38
Contour Farming	330	2	0	0	0	0	2.00	1	0	0	0	1.00	-2	1	-1	0	0	1	-0.25	1	-1	2	-1	1	-1	1	0	2	0	0	0	0.50	0	0	0	0	0.00	0.08	0.00	-0.60	2.00	0.65
Contour Orchard and Other Perennial Crops	331	4	0	1	0	0	2.50	2	0	0	0	2.00	-2	1	-1	0	1	2	0.20	1	-1	2	-1	1	-1	0	0	2	0	0	0	0.43	0	0	0	0	0.00	0.21	0.00	-0.60	2.50	1.03
Controlled Traffic Farming	334	0	0	0	0	0	0.00	0	4	0	0	4.00	0	0	0	0	1	1	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	0.33	0.00	0.00	0.00	1.00
Cover Crop	340	4	4	3	0	0	3.67	2	2	0	1	1.25	1	2	1	0	1	2	1.40	3	3	3	3	0	3	2	3	4	0	0	0	3.00	2	2	0	2	2.00	2.13	2.00	2.40	3.67	2.26
Critical Area Planting	342	5	5	5	4	4	4.60	5	2	0	1	2.67	0	0	0	0	0	0	0.00	3	0	3	2	3	0	3	0	4	0	0	0	3.00	2	2	0	2	2.00	1.67	2.00	0.40	4.60	2.45
Cross Wind Ridges	588	0	4	0	0	0	4.00	1	0	0	0	1.00	0	0	0	0	0	0	0.00	1	0	1	0	1	0	0	0	1	0	0	0	1.00	0	0	0	0	0.00	0.33	0.00	0.00	4.00	1.20
Cross Wind Trap Strips	589C	0	4	0	0	0	4.00	2	0	0	0	2.00	0	0	0	0	0	0	0.00	2	0	2	0	1	0	0	0	1	0	0	0	1.50	0	2	0	2	2.00	1.17	2.00	0.00	4.00	1.90
Dam	402	0	0	0	2	1	1.50	0	0	0	-1	-1.00	-2	2	-1	0	2	0	0.25	0	0	0	-1	0	0	-2	0	2	0	0	0	-0.25	2	2	0	2	1.50	0.50	1.50	-0.20	1.50	0.40
Dam, Diversion	348	0	0	0	0	-1	-1.00	0	0	0	0	0.00	0	2	0	0	2	2	2.00	0	0	0	0	0	0	0	0	0	-2	0	0	-2.00	-2	-2	-2	-2	-2.00	-0.67	-2.00	0.00	-1.00	-0.60
Deep Tillage	324	0	0	0	0	0	0.00	-4	5	-1	2	0.50	-2	0	2	0	2	2	1.00	0	0	1	-2	1	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	0.33	0.00	-0.40	0.00	0.30
Denitrifying Bioreactor	605	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	3	1	0	0	0	0	0	0	0	0	2.00	0	0	0	0	0.00	0.67	0.00	0.20	0.00	0.40
Dike	356	0	0	0	1	-2	-0.50	0	0	0	0	0.00	-1	2	-1	0	0	0	0.00	2	2	0	0	0	0	0	0	0	0	0	0	1.33	-2	-2	0	1	-0.75	0.19	-0.75	0.40	-0.50	0.02
Diversion	362	1	0	2	2	1	1.50	0	0	0	0	0.00	-1	2	2	0	2	2	1.40	1	1	0	-1	0	0	1	0	2	0	1	0	0.71	0	0	0	0	0.00	0.70	0.00	0.00	1.50	0.72
Drainage Water Management	554	0	2	0	0	0	2.00	2	-1	2	0	1.00	1	-2	2	0	0	0	0.33	2	2	1	-1	0	0	1	1	0	0	2	0	0.89	0	0	2	2	2.00	1.07	2.00	0.40	2.00	1.24
Dry Hydrant	432	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	-1	-1	-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	-0.33	0.00	0.00	0.00	-0.20
Dust Control from Animal Activity on Open Lot Surfaces	375	0	2	0	0	0	2.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	1	0	1	0	1	0	0	0	0	0	1.00	0	0	0	0	0.00	0.33	0.00	0.00	2.00	0.60
Dust Control on Unpaved Roads and Surfaces	373	2	5	0	0	0	3.50	0	0	0	-1	-1.00	0	0	0	0	0	0	0.00	0	0	-1	0	-1	0	0	0	1	0	-1	0	-0.50	0	0	0	0	0.00	-0.17	0.00	0.00	3.50	0.40
Early Successional Habitat Development/Mgt.	647	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	-2	0	0	-1.00	4	4	0	4	4.00	1.00	4.00	0.00	0.00	0.60
Emergency Animal Mortality Management	368	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	2	2	0	0	2	2	0	0	0	0	2.00	0	0	0	0	0.00	0.67	0.00	0.80	0.00	0.40
Farmstead Energy Improvement	374	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	-2	0	0	-2.00	0	0	0	0	0.00	-0.67	0.00	0.00	0.00	-0.40
Feed Management	592	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	2	2	1	0	1	1	0	0	0	0	1.40	0	0	0	0	0.00	0.47	0.00	0.60	0.00	0.28
Fence	382	1	0	0	0	0	1.00	0	3	0	0	3.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	2	0	0	0	0	0	2.00	0	0	1	0	1.00	0.00	1.00	0.00	1.00	1.40
Field Border	386	4	4	1	0	1	2.50	4	2	0	0	2.00	0	1	0	0	0	0	1.00	2	2	1	1	0	1	1	0	2	0	0	0	1.43	2	2	0	2	2.00	1.48	2.00	0.80	2.50	1.79
Field Operations Emissions Reduction	376	1	4	0	0	0	2.50	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	0.00	0.00	0.00	2.50	0.50
Filter Strip	393	0	0	0	0	0	0.00	5	0	0	0	5.00	0	0	0	0	0	0	0.00	2	1	5	2	1	1	3	1	5	0	4	1	2.36	2	2	0	2	2.00	1.45	2.00	1.20	0.00	1.87
Firebreak	394	-1	-1	-1	-1	0	-0.80	-2	-2	0	0	-2.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	-1	0	0	0	-1.00	0	0	0	-1	-1.00	-0.67	-1.00	0.00	-0.80	-0.96
Fish Raceway or Tank	398	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	-1	-1	-1	0	-1	-1	0	-1	0	0	-1.00	0	0	0	0	0.00	-0.33	0.00	-0.40	0.00	-0.20
Fishpond Management	399	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	-2	0	0	0	0	0	0	0	0	-2.00	4	4	2	4	3.50	0.50	3.50	-0.40	0.00	0.30
Forage and Biomass Planting	512	1	1	0	0	0	1.00	1	2	0	0	1.50	0	1	0	0	0	0	1.00	1	0	1	0	0	0	1	0	1	0	1	0	1.00	1	1	0	0	1.00	1.00	1.00	0.00	1.00	1.10
Forage Harvest Management	511	1	1	0	0	0	1.00	1	3	0	0	2.00	0	0	0	0	1	1	1.00	2	0	1	0	0	0	1	0	0	0	1	0	1.25	1	1	0	0	1.00	1.08	1.00	0.00	1.00	1.25
Forest Stand Improvement	666	1	0	1	1	0	0.75	1	-1	0	0	0.00	0	0	0	0	0	3	3.00	0	0	1	2	1	0	1	1	0	1	1	1	0.75	3	1	0	3	2.33	2.03	2.33	0.80	0.75	1.37
Forest Trails and Landings	655	-1	0	-1	-1	0	-0.75	-1	1	0	0	0.00	0	0	0	0	0	0	0.00	0	0	1	0	0	0	0	0	0	0	0	0	0.50	1	1	0	-1	0.33	0.28	0.33	0.00	-0.75	0.02
Fuel Break	383	-1	-1	-1	-1	0	-1.00	-3	-1	0	0	-2.00	0	0	-1	0	0	0	-1.00	-1	-1	0	0	0	0	0	0	-1	0	0	0	-1.00	1	-1	0	0	0.40	-0.53	0.40	-0.20	-1.00	-0.92
Grade Stabilization Structure	410	0	0	0	2	2	2.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	2	0	0	0	1.00	2	2	1	0	1.67	0.89	1.67	0.00	2.00	0.93
Grassed Waterway	412	0	0	5	4	1	3.33	3	0	0	-1	1.00	0	3	2	0	0	0	2.50	2	0	2	0	0	0	1	0	2	0	1	0	1.33	1	1	1	1	1.00	1.61	1.00	0.00	3.33	1.83
Grazing Land Mechanical Treatment	548	1	1	0	0	0	1.00	1	0	0	0	1.00	0	2	0	0	0	2	2.00	0	0	1	0	0	0	1	0	5	0	0	0	2.33	0	0	0	0	0.00	1.44	0.00	0.00	1.00	1.27
Groundwater Testing	355	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Use Area Protection	561	2	2	2	0	0	2.00	0	-1	0	0	-0.50	0	-1	0	0	0	0	-1.00	0	0	1	0	0	0	2	0	2	0	0	0	1.67	0	0	0	-1	-1.00	-0.11	-1.00	0.00	2.00	0.23
Hedgerow Planting	422	0	1	0	0	0	1.00	2	1	0	0	1.50	0	0	0	2	0	0	2.00	1	0	2	0	0	0	0	0	0	1	0	0	1.33	4	4	0	4	4.00	2.44	4.00	0.00	1.00	1.97
Herbaceous Weed Control	315	4	4	2	2	4	3.20	0	0	0	0	0.00	0	0	0	0	2	0	2.00	-1	0	0	0	0	0	0	0	0	0	0	0	-0.25	2	2	0	1	1.67	1.14	1.67	0.00	3.20	1.32
Herbaceous Wind Barriers	603	0	4	0	0	0	4.00	2	0	0	0	2.00	0	0	0	0	0	3	3.00	1	0	1	0	0	0	0	0	1	0	0	0	1.00	2	2	0	2	2.00	2.00	2.00	0.00	4.00	2.40
High Tunnel System	325	0	0	-1	0	0	-1.00	1	0	0	0	1.00	0	-3	0	0	0	-1	-2.00	0	0	0	0	0	0	0	0	-1	0	0	0	-1.00	0	0	0	0	0.00	-1.00	0.00	0.00	-1.00	-0.60
Hillside Ditch	423	2	0	2	2	1	1.75	0	0	0	0	0.00	0	4	0	0	0	1	2.50	1	0	-1	-1	0	0	-2	0	2	0	-1	0	-0.25	0	0	1	0	1.00	1.08	1.00	-0.20	1.75	1.00
Integrated Pest Management	595	2	2	2	2	0	2.00	2	2	0	0	2.00	0	0	0	0	0	0	0.00	5	5	0	0	0	0	0	0	2	0	0	0	4.00	2	0	2	0	2.00	2.00	2.00	1.00	2.00	2.00
Irrigation Canal or Lateral	320	0	0	0	0	0	0.00	0	0	0	0	0.00	0	2	-2	0	5	0	1.67	0	0	-2	0	0	0	-2	0	0	0	0	0	-1.33	0	0	1	0	1.00	0.44	1.00	0.00	0.00	0.27
Irrigation Ditch Lining	428	0	0	0	0	0	0.00	0	0	0	0	0.00	1	0	-1	0	5	0	1.67	0	0	1	1	1	2	-1	1	1	0	-1	1	0.60	0	0	1	0	1.00	1.09	1.00	1.00	0.00	0.65
Irrigation Field Ditch	388	0	0	0	0	0	0.00	0	0	0	0	0.00	0	1	-1	0	5	0	1.25	0	0	0	0	0	0	-1	0	0	0	1	0	0.00	0	0	1	0	1.00	0.75	1.00	0.00	0.00	0.45
Irrigation Land Leveling	464	1	0	1	0	0	1.00	-2	-2	0	-1	-1.67	0	1	2	0	4	0	2.33	2	2	2	2	0	2	2	2	1	0	1	1	1.70	0	0	0	0	0.00	1.34	0.00	1.80	1.00	0.67
Irrigation Pipeline	430	0	0	0	2	0	2.00	0	0	0	0	0.00	1	0	1	0	2	0	1.33	0	0	1	0	1	2	1	1	1	0	0	1	1.14	0	0	0	0	0.00	0.83	0.00	0.80	2.00	0.90
Irrigation Reservoir	436	0	0	0	2	1	1.50	0	0	0	0	0.00	-1	2	-1	0	2	0	0.50	0	0	0	-1	0	0	0	0	2	0	0	0	0.50	2	-1	2	-1	0.50	0.50	0.50	-0.20	1.50	0.60
Irrigation System, Microirrigation	441	0	0	0	0	0	0.00	0	0	0	1	1.00	2	2	2	0	2	0	2.00	2	2	2	2	0	2	2	2	2	0	2	2	2.00	0	0	1	0	1.00	1.67	1.00	2.00	0.00	1.20
Irrigation System, Surface & Subsurface	443	0	1	0	-1	-1	-0.33	0	-1	0	0	-0.50	1	1	1	0	2	0	1.25	1	1	1	1	1	1	1	1	0	0	1	1	1.00	0	0	1	0	1.00	1.08	1.00	1.00	-0.33	0.48
Irrigation System, Tailwater Recovery	447	0	0	1	1	1	1.00	0	-1	0	-1	-1.00	-1	1	-1	0	2	0	0.25	2	2	2	-1	1	-1	1	0	1	0	4	-1	0.73	0	0	1	0	1.00	0.66	1.00	-0.20	1.00	0.40
Irrigation Water Management	449	0	3	0	0	0	3.00	1	0	0	2	1.50	0	0	2	0	2	0	2.00	3	2	3	2	3	2	3	2	3	0	3	2	2.55	0	4	0	3	3.50	2.68	3.50	2.00	3.00	2.51
Karst Sinkhole Treatment	527	0	0	4	4	0	4.00	0	0	0	2	2.00	0	-2	0	0	0	0	-2.00	2	2	2	2	0	2	2	2	2	0	0	2	2.00	0	0	0	0	0.00	0.00	0.00	2.00	4.00	1.20
Land Clearing	460	0	0	0	0	0	0.00	-3	-1	0	0	-2.00	0	-1	0	0	0	0	-1.00	-1	0	-1	0	0	0	-1	0	-1	-2	-1	0	-1.00	-2	-2	0	-2	-2.00	-1.33	-2.00	0.00	0.00	-1.20
Land Reclamation, Abandoned Mined Land	543	4	4	4	1	0	3.25	3	1	0	4	2.67	0	3	0	0	0	0	3.00	0	0	0	0	1	1	3	0	4	0	0	1	2.00	2	2	0	1	1.67	2.22	1.67	0.40	3.25	2.52
Land Reclamation, Currently Mined Land	544	4	4	4	1	0	3.25	3	1	0	4	2.67	0	3	0	0	0	0	3.00	0	0	0	0	1	1	3	0	4	0	0	1	2.00	2	2	0	1	1.67	2.22	1.67	0.40	3.25	2.52
Land Reclamation, Landslide Treatment	453	2	2	2	0	0	2.00	2	0	0	0	0.67	2	0	2	0	0	0	2.00	0	0	0	0	0	0	1	0	4	0	4	0	3.00	2	2	0	0	2.00	2.33	2.00	0.00	2.00	1.93
Land Reclamation, Toxic Discharge Control	455	2	2	2	0	0	2.00	0	0	0	2	2.00	2	1	2	0	0	0	1.67	0	0	0	0	2	0	0	0	0	0	4	2	2.67	2	2	0	0	2.00	2.11	2.00	0.80	2.00	2.07
Land Smoothing	466	0	0	1	0	0	0.50	-2	-2	0	-1	-1.67	2	2	2	0	2	2	2.00	1	1	1	2	0	0	0	0	1	0	1	0	1.17	0	0	0	-1	-1.00	0.72	-1.00	0.60	0.50	0.20
Lighting System Improvement	670	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Lined Waterway or Outlet	468	0	0	5	2	0	3.50	0	0	0	0	0.00	2	2	2	0	0	0	2.00	0	0	0	2	0	0	0	0	2	0	0	0	2.00	-2	1	0	0	-0.50	1.17	-0.50	0.40	3.50	1.40
Livestock Pipeline	516	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Livestock Shelter Structure	576	0	0	0	0	3	3.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	3	0	0	0	2	0	2	0	0	0	2.33	0	0	0	0	0.00	0.78	0.00	0.00	3.00	1.07
Mine Shaft & Adit Closing	457	0	0	0	0	0	0.00	0	0	2	0	2.00	0	0	2	0	0	0	2.00	0	0	0	0	0	2	0	0	0	0	2	1	1.67	0	0	0	2	2.00	1.89	2.00	0.60	0.00	1.53
Mole Drain	482	1	0	1	0	-1	0.20	-2	1	-2	2	-0.25	2	2	2	0	0	0	1.20	1	1	-4	2	-2	2	0	2	1	0	0	2	0.56	0	0	0	0	0.00	0.59	0.00	1.80	0.20	0.34
Monitoring Well	353	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Mulching	484	4	4	0	0	0	4.00	1	0	0	1	1.00	-1	1	-1	0	2	2	0.60	2	0	2	-1	1	-1	0	0	2	0	0	0	0.83	1	1	0	0	1.00	0.81	1.00	-0.40	4.00	1.49
Multi-Story Cropping	379	1	1	1	1	0	1.00	5	2	1	1	2.25	1	1	1	0	0	0	1.00	3	1	1	0	1	0	1	1	1	0	1	1	1.10	3	1	0	1	1.67	1.26	1.67	0.60	1.00	1.40
Nutrient Management	590	0	0	0	0	0	0.00	2	-1	0	4	1.67	0	0	0	0	0	0	0.00	0	0	5	5	3	3	4	4	0	0	2	2	3.50	0	0	0	0	0.00	1.17	0.00	2.80	0.00	1.03
Obstruction Removal	500	0	0	0	0	0	0.00	1	-1	0	0	0.00	0	0	0	2	0	0	2.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	-2	0	0	-2.00	0.00	-2.00	0.00	0.00	0.00
On-Farm Secondary Containment Facility	319	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	5	5	5.00	0	0	0	0	0.00	1.67	0.00	1.00	0.00	1.00
Open Channel	582	0	0	0	0	2	2.00	0	0	0	0	0.00	1	5	2	0	0	0	2.67	0	0	-1	0	0	0	0	0	0	0	-1	0	-0.67	0	0	-2	0	-0.50	0.50	-0.50	0.00	2.00	0.70
Pond	378	0	0	0	2	1	1.50	0	0	0	-1	-1.00	-2	2	-1	0	2	2	0.60	0	0	2	-1	0	0	-2	0	2	0	0	0	0.20	2	2	4	2	2.50	1.10	2.50	-0.20	1.50	0.76
Pond Sealing or Lining, Concrete	522	0	0	0	0	0	0.00	0	0	0	1	1.00	1	0	2	0	2	2	1.75	0	0	2	2	0	3	0	2	0	0	0	1	2.00	0	0	1	0	1.00	1.58	1.00	1.60	0.00	1.15
Pond Sealing or Lining, Compacted Soil Treatment	520	0	0	0	0	0	0.00	0	0	0	1	1.00	1	0	2	0	2	2	1.75	0	0	2	2	0	3	0	2	0	0	0	1	2.00	0	0	1	0	1.00	1.58	1.00	1.60	0.00	1.15
Pond Sealing or Lining, Flexible Membrane	521A	0	0	0	0	0	0.00	0	0	0	1	1.00	1	0	2	0	2	2	1.75	0	0	2	2	0	3	0	2	0	0	0	1	2.00	0	0	1	0	1.00	1.58	1.00	1.60	0.00	1.15
Precision Land Forming	462	0	0	2	4	0	2.00	-2	-1	0	1	-0.67	2	2	2	0	0	2	2.00	1	1	1	2	0	1	0	1	1	0	1	1	1.11	0	0	0	0	0.00	1.04	0.00	1.20	2.00	0.89
Prescribed Burning	338	2	2	1	1	1	1.40	1	0	-1	-1	-0.33	0	1	0	0	0	0	1.00	0	0	2	1	0	0	0	0	1	0	1	0	1.25	2	2	0	4	2.67	1.64	2.67	0.20	1.40	1.20
Prescribed Grazing	528	4	4	3	1	3	3.00	4	3	0	2	3.00	0	1	0	0	0	2	1.50	2	2	3	3	2	2	3	3	3	2	0	0	2.50	2	2	4	4	3.00	2.33	3.00	2.00	3.00	2.60
Pumping Plant	533	0	0	0	0	0	0.00	0	0	2	0	2.00	2	2	2	0	2	2	2.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	0	0	0.00	0.67	0.00	0.00	0.00	0.80
Range Planting	550	4	4	4	2	2	3.20	4	4	0	1	3.00	0	0	0	1	0	2	0.75	2	2	1	1	1	1	1	1	2	1	2	1	1.33	2	2	0	4	2.67	1.58	2.67	1.20	3.20	2.19
Recreation Area Improvement	562	1	1	1	1	1	1.00	1	1	0	0	1.00	0	1	0	0	0	0	1.00	1	1	0	0	0	0	0	0	1	0	0	0	1.00	1	1	0	-1	0.33	0.78	0.33	0.20	1.00	0.87
Recreation Land Grading and Shaping	566	0	0	0	4	2	1.20	1	0	0	0	0.50	0	2	0	0	0	0	2.00	0	0	0	0	0	0	0	0	2	0	0	0	2.00	-2	-2	0	-2	-2.00	0.67	-2.00	0.00	1.20	0.74
Residue and Tillage Management, No Till	329	4	4	1	0	0	3.00	2	2	0	0	2.00	-1	2	-1	0	2	2	0.80	4	0	3	0	2	0	2	0	4	0	0	0	3.00	2	2	0	1	1.67	1.82	1.67	0.00	3.00	2.09
Residue and Tillage Management, Reduced Till	345	4	4	1	0	0	3.00	2	2	0	1	1.67	0	1	0	0	1	2	1.33	4	0	3	0	2	0	2	0	4	0	0	0	3.00	2	2	0	1	1.67	2.00	1.67	0.00	3.00	2.13
Restoration and Management of Rare or Declining Habitats	643	2	3	2	0	2	2.25	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	2	2	0	0	2.00	4	4	4	4	4.00	2.00	4.00	0.00	2.25	1.65
Riparian Forest Buffer	391	3	2	1	3	4	2.60	4	2	0	1	2.33	1	-1	2	0	0	0	0.67	3	1	5	5	1	1	3	1	5	5	3	1	2.83	5	5	1	5	4.00	2.50	4.00	1.80	2.60	2.49
Riparian Herbaceous Cover	390	2	2	1	0	4	2.25	4	4	0	2	3.33	2	-3	2	0	0	0	0.33	2	2	5	5	1	1	3	2	4	2	2	1	2.50	4	4	2	4	3.50	2.11	3.50	2.20	2.25	2.38
Road/Trail/Landing Closure and Treatment	654	5	1	5	5	4	4.00	5	2	0	0	2.33	1	3	4	0	0	1	2.25	0	0	1	1	0	0	1	1	3	1	3	1	1.50	1	1	1	3	1.50	1.75	1.50	0.60	4.00	2.32
Rock Barrier	555	5	0	5	1	1	3.00	0	0	0	0	0.00	1	0	1	2	0	0	1.33	0	0	0	0	1	-1	1	0	2	0	1	0	0.80	0	0	0	0	0.00	0.71	0.00	-0.20	3.00	1.03
Roof Runoff Structure	558	1	0	3	1	1	1.50	0	0	0	0	0.00	1	-1	1	0	0	3	1.00	0	0	2	2	2	0	2	0	1	0	0	0	1.80	0	0	0	0	0.00	0.93	0.00	0.40	1.50	0.86
Roofs and Covers	367	0	0	0	0	0	0.00	0	0	0	0	0.00	0	-1	0	0	0	0	-1.00	0	0	0	0	0	0	0	1	0	0	1	1	1.00	0	0	0	0	0.00	0.00	0.00	0.40	0.00	0.00
Row Arrangement	557	3	1	3	0	0	2.33	1	0	0	1	1.00	-1	2	-1	0	4	4	1.60	1	-1	-2	2	0	0	1	0	2	0	0	0	0.43	0	0	0	0	0.00	0.68	0.00	0.20	2.33	1.07

Franklin County VSP Work Plan	Code	Soil Erosion – Sheet and Rill	Soil Erosion – Wind	Soil Erosion – Ephemeral Gully	Soil Erosion – Classic Gully	Soil Erosion – Streambank/ Shoreline/ Conveyance	Soil Erosion Average	Soil Condition – Organic Matter Depletion	Soil Condition – Compaction	Soil Condition – Subsidence	Soil Condition – Contaminants: Salts or Other Chemicals	Soil Condition Average	Water Quantity – Excessive Seepage	Water Quantity – Excessive Runoff, Flooding, or Ponding	Water Quantity – Excessive Subsurface Water	Water Quantity – Drifted Snow	Water Quantity – Inefficient Water Use on Irrigated Land	Water Quantity – Inefficient Water Use on Nonirrigated Land	Hydrology Average	Water Quality Degradation - Pesticides in Surface Water	Water Quality Degradation - Pesticides in Groundwater	Water Quality Degradation - Nutrients in Surface water	Water Quality Degradation - Nutrients in Groundwater	Water Quality Degradation - Salts in Surface Water	Water Quality Degradation - Salts in Groundwater	Water Quality Degradation – Excess Pathogens and Chemicals from Manure, Bio-solids or Compost Applications in Surface Water	Water Quality Degradation – Excess Pathogens and Chemicals from Manure, Bio-solids or Compost Applications in Groundwater	Water Quality Degradation - Excessive Sediment in Surface Water	Water Quality Degradation - Elevated Water Temperature	Water Quality Degradation - Petroleum, Heavy Metals and Other Pollutants Transported to Surface Water	Water Quality Degradation - Petroleum, Heavy Metals and Other Pollutants Transported to Groundwater	Water Quality Average	Fish and Wildlife – Inadequate Food	Fish and Wildlife – Inadequate Cover/Shelter	Fish and Wildlife – Inadequate Water	Fish and Wildlife – Inadequate Space	Habitat Average	Wetlands	Fish/Wildlife Habitat Conservation Areas	Critical Aquifer Recharge Areas	Geologically Hazardous Areas (Erosion)	Frequently Flooded Areas
Salinity and Sodic Soil Management	610	0	0	0	0	0	0.00	0	0	0	2	2.00	0	0	0	0	2	2	2.00	0	0	0	0	-2	-2	0	-1	0	0	0	-1	-1.50	0	0	0	0	0.00	0.17	0.00	-0.80	0.00	0.50
Saturated Buffer	604	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	5	0	0	0	0	0	0	0	0	0	5.00	0	0	0	0	0.00	1.67	0.00	0.00	0.00	1.00
Sediment Basin	350	0	0	2	2	0	1.33	0	0	0	0	0.00	-2	2	-2	0	0	0	-0.67	2	-1	5	-1	2	-1	2	-1	4	0	2	-1	1.00	-1	-1	1	0	-0.33	0.00	-0.33	-1.00	1.33	0.27
Shallow Water Development and Management	646	0	0	0	0	0	0.00	1	0	0	0	1.00	0	2	0	0	0	0	2.00	0	0	1	1	0	-1	2	-1	2	0	2	1	0.70	4	2	2	4	3.00	1.90	3.00	0.00	0.00	1.34
Short Term Storage of Animal Waste and Byproducts	318	0	0	0	0	0	0.00	1	1	0	0	1.00	0	0	0	0	0	0	0.00	0	0	4	2	2	1	2	2	0	0	0	1	2.00	0	0	0	0	0.00	0.67	0.00	1.20	0.00	0.60
Silvopasture Establishment	381	4	3	3	2	2	2.80	3	0	0	0	3.00	1	2	1	2	0	2	1.60	2	1	3	2	1	1	1	1	3	1	1	1	1.50	1	1	1	0	1.00	1.37	1.00	1.20	2.80	1.98
Spoil Spreading	572	0	0	0	0	0	0.00	1	-1	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	2	0	0	0	2.00	0	0	0	0	0.00	0.67	0.00	0.00	0.00	0.40
Spring Development	574	0	0	1	1	1	1.00	0	-1	0	0	-1.00	2	1	2	0	2	2	1.80	0	0	0	0	1	0	1	0	2	0	0	0	1.25	0	0	4	2	3.00	2.02	3.00	0.00	1.00	1.21
Sprinkler System	442	0	2	0	0	0	2.00	0	-1	0	2	0.50	1	2	1	0	5	0	2.25	2	2	2	1	2	2	1	1	0	1	1	1	1.55	0	0	1	0	1.00	1.60	1.00	1.40	2.00	1.46
Stormwater Runoff Control	570	0	0	2	0	3	2.50	0	1	0	0	1.00	-1	4	-1	0	0	0	0.67	0	0	2	0	0	0	0	0	4	0	2	0	2.67	0	0	0	0	0.00	1.11	0.00	0.00	2.50	1.37
Streambank and Shoreline Protection	580	0	0	0	0	4	4.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	1	0	0	0	1	0	2	1	0	0	1.25	2	2	0	2	1.50	0.92	1.50	0.00	4.00	1.35
Stream Crossing	578	0	0	0	0	2	2.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	1	0	0	0	-3	2	2	0	0	0	0.50	0	0	0	0	0.00	0.17	0.00	0.40	2.00	0.50
Stream Habitat Improvement and Management	395	0	0	0	0	5	5.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	2	2	0	0	2.00	2	3	3	4	3.00	1.67	3.00	0.00	5.00	2.00
Stripcropping	585	4	4	0	0	0	4.00	2	0	0	0	2.00	-2	1	-1	1	0	1	0.00	2	0	2	0	1	-1	1	0	2	0	0	0	1.17	2	2	0	1	1.67	0.94	1.67	-0.20	4.00	1.77
Structure for Water Control	587	0	0	0	0	0	0.00	0	0	0	0	0.00	0	2	0	0	2	2	2.00	0	0	0	0	0	0	0	0	1	1	0	0	1.00	0	0	2	0	2.00	1.67	2.00	0.00	0.00	1.00
Structures for Wildlife	649	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	4	0	0	4.00	1.33	4.00	0.00	0.00	0.80
Subsurface Drain	606	4	-1	4	1	1	1.80	-2	2	-2	2	0.00	4	4	4	0	2	1	3.00	2	2	-2	1	-2	2	0	1	2	0	0	1	0.70	0	0	0	0	0.00	1.23	0.00	1.40	1.80	1.10
Surface Drainage, Field Ditch	607	1	-1	2	0	0	0.67	-2	1	-1	2	0.00	0	2	2	0	2	2	2.00	0	1	-2	1	-2	1	-2	1	1	0	-2	1	-0.20	0	0	0	0	0.00	0.60	0.00	1.00	0.67	0.49
Surface Drainage, Main or Lateral	608	0	-1	2	0	0	0.50	0	0	0	0	0.00	0	2	2	0	2	2	2.00	0	0	-2	1	-2	2	-2	2	1	0	-2	2	-0.22	0	0	0	0	0.00	0.59	0.00	1.40	0.50	0.46
Surface Roughening	609	0	3	0	0	0	3.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0	1	0	0	0	0.00	0	0	0	0	0.00	0.00	0.00	-0.20	3.00	0.60
Terrace	600	5	1	4	2	1	2.60	2	-1	0	0	0.50	-1	4	-1	-1	0	3	0.80	2	-2	2	-2	2	-2	2	-1	2	0	2	-1	0.36	0	1	0	0	1.00	0.72	1.00	-1.60	2.60	1.05
Trails and Walkways	575	1	1	1	4	2	1.80	0	2	0	0	2.00	0	2	0	0	0	0	2.00	0	0	0	0	0	0	1	0	2	0	0	0	1.50	4	4	2	0	3.33	2.28	3.33	0.00	1.80	2.13
Tree/Shrub Establishment	612	5	5	4	2	2	3.60	4	2	0	1	2.33	2	0	2	1	0	1	1.50	2	2	2	2	2	2	2	2	3	2	2	2	2.08	3	3	0	3	3.00	2.19	3.00	2.00	3.60	2.50
Tree/Shrub Site Preparation	490	-1	-1	-2	-1	0	-1.25	-2	-1	0	0	-1.50	0	0	0	0	0	2	2.00	-1	2	-1	0	0	0	0	-1	0	0	0	0	-0.50	0	0	0	0	0.00	0.50	0.00	-0.20	-1.25	-0.25
Tree/Shrub Pruning	660	1	0	0	0	0	1.00	1	0	0	0	1.00	0	0	0	0	0	0	0.00	1	1	1	1	0	0	0	0	0	0	0	0	1.00	1	1	1	0	1.00	0.67	1.00	0.40	1.00	0.80
Underground Outlet	620	0	0	5	4	-1	2.67	0	0	0	0	0.00	0	4	0	0	0	0	4.00	-1	0	-1	0	0	0	-1	0	0	0	1	0	-0.50	0	0	0	0	0.00	1.17	0.00	0.00	2.67	1.23
Upland Wildlife Habitat Management	645	3	3	3	2	1	2.40	0	0	0	0	0.00	0	-3	2	0	0	0	-0.50	0	0	0	0	0	0	0	0	2	0	0	0	2.00	5	5	0	5	5.00	2.17	5.00	0.00	2.40	1.78
Vegetated Treatment Area	635	4	4	0	0	0	4.00	3	3	0	-2	1.33	-1	0	-2	0	0	0	-1.50	0	0	4	-2	2	-2	5	0	2	0	0	0	1.50	0	0	0	0	0.00	0.00	0.00	-0.80	4.00	1.07
Vegetative Barrier	601	4	1	1	0	0	2.00	0	0	0	-2	-2.00	0	0	0	0	0	0	0.00	2	0	2	0	1	0	1	0	2	0	0	0	1.60	1	1	1	1	1.00	0.87	1.00	0.00	2.00	0.52
Vertical Drain	630	0	0	1	0	0	1.00	0	0	0	0	0.00	0	4	-2	0	0	0	1.00	0	-2	1	-2	1	-1	1	-1	1	0	0	-1	-0.20	0	0	0	0	0.00	0.27	0.00	-1.40	1.00	0.36
Waste Facility Closure	360	0	0	0	0	0	0.00	0	0	0	2	2.00	0	0	0	0	0	0	0.00	0	0	2	2	0	1	0	2	0	0	0	0	1.75	0	0	0	0	0.00	0.58	0.00	1.00	0.00	0.75
Waste Recycling	633	0	0	0	0	0	0.00	1	0	0	0	1.00	0	0	0	0	1	1	1.00	0	0	2	2	2	2	0	2	0	0	0	0	1.43	0	0	0	0	0.00	0.81	0.00	1.20	0.00	0.69
Waste Separation Facility (no)	632	0	0	0	0	0	0.00	1	0	0	0	0.50	0	0	0	0	1	0	1.00	0	0	2	2	2	2	2	2	0	0	2	2	2.00	0	0	0	0	0.00	1.00	0.00	1.60	0.00	0.70
Waste Storage Facility	313	0	0	0	0	0	0.00	1	1	0	0	1.00	0	0	0	0	1	0	1.00	0	0	4	2	2	1	2	2	0	0	0	0	1.75	0	0	0	0	0.00	0.92	0.00	1.20	0.00	0.75
Waste Transfer	634	-1	-1	-1	0	0	-1.00	0	-1	0	0	-1.00	0	0	0	0	0	1	1.00	0	0	2	2	2	2	2	2	0	0	0	0	1.50	0	0	0	0	0.00	0.83	0.00	1.20	-1.00	0.10
Waste Treatment	629	0	0	0	0	0	0.00	1	1	0	0	1.00	0	0	0	0	1	0	0.25	0	0	2	2	2	2	2	2	0	0	2	2	2.00	0	0	0	0	0.00	0.75	0.00	1.60	0.00	0.65
Waste Treatment Lagoon	359	0	0	0	0	0	0.00	1	1	0	0	1.00	0	0	0	0	1	0	0.50	0	0	4	2	2	1	4	2	0	0	0	1	2.00	0	0	0	0	0.00	0.83	0.00	1.20	0.00	0.70
Water and Sediment Control Basin	638	0	0	2	2	0	2.00	0	0	0	0	0.00	-2	2	-2	0	0	0	-0.67	0	-1	0	-1	0	-1	0	-1	4	-2	0	-1	-0.43	0	0	2	0	2.00	0.30	2.00	-1.00	2.00	0.58
Water Harvesting Catchment	636	0	0	0	0	0	0.00	0	0	0	0	0.00	1	0	0	0	0	0	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0	0	4	2	3.00	1.33	3.00	0.00	0.00	0.80
Watering Facility	614	2	2	2	1	4	2.20	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	4	0	2	1	2	1	1	0	0	0	1.71	0	0	5	3	4.00	1.90	4.00	0.20	2.20	1.58
Water Well	642	2	2	2	0	0	2.00	0	0	0	1	1.00	0	0	2	0	2	0	2.00	0	0	0	0	0	0	0	-1	0	0	0	0	-1.00	0	0	1	0	1.00	0.67	1.00	0.00	2.00	1.00
Waterspreading	640	0	0	0	-1	0	-1.00	1	0	0	1	1.00	0	1	-1	0	1	2	0.75	1	-1	2	-1	1	-1	0	-1	0	0	1	-1	0.00	2	2	1	0	1.67	0.81	1.67	-1.00	-1.00	0.48
Well Decommissioning	351	0	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	2	0	2	0	2	0	2	0	0	0	2	2.00	0	0	0	0	0.00	0.67	0.00	2.00	0.00	0.40
Wetland Creation	658	0	0	0	0	0	0.00	2	0	0	0	2.00	0	2	-1	0	0	0	0.50	1	1	3	1	1	0	1	0	2	0	2	0	1.50	5	5	2	4	4.00	2.00	4.00	0.40	0.00	1.60
Wetland Enhancement	659	0	0	0	0	0	0.00	1	0	0	0	1.00	0	2	0	0	0	0	2.00	1	1	3	1	1	0	1	0	2	0	2	0	1.50	5	5	2	4	4.00	2.50	4.00	0.40	0.00	1.70
Wetland Restoration	657	0	0	0	0	0	0.00	1	0	0	0	1.00	0	2	0	0	0	0	2.00	1	1	3	1	1	0	1	0	2	0	2	0	1.50	5	5	2	4	4.00	2.50	4.00	0.40	0.00	1.70
Wetland Wildlife Habitat Management	644	0	0	0	0	0	0.00	0	0	0	0	0.00	0	2	0	0	0	0	2.00	0	0	0	0	0	0	1	0	3	0	0	0	2.00	5	5	2	4	4.00	2.67	4.00	0.00	0.00	1.60
Windbreak/Shelterbelt Establishment	380	1	5	2	0	0	2.67	4	2	0	1	2.33	2	0	2	5	5	3	2.83	3	0	1	1	0	0	0	0	1	0	1	0	1.40	3	3	0	3	3.00	2.41	3.00	0.20	2.67	2.45
Windbreak/Shelterbelt Renovation	650	1	5	2	0	0	2.67	4	2	0	1	2.33	2	0	2	5	5	3	2.83	3	0	1	1	0	0	0	0	1	0	1	0	1.40	3	3	0	3	3.00	2.41	3.00	0.20	2.67	2.45
Woody Residue Treatment	384	1	1	1	1	0	1.00	-1	-2	0	0	-1.50	0	0	0	0	0	1	1.00	0	0	0	0	0	0	0	0	1	0	0	0	1.00	0	0	0	0	0.00	0.67	0.00	0.00	1.00	0.30

Appendix C Attachment 2
Franklin County Practice Toolbox with CPPE Averaged Function Scores

Franklin County Conservation Practices

NRCS Practice Code	Conservation Practice	Direct Effect Scores					Average CPPE Scores		Function Effects: Average CPPE Scores				Critical Areas					Agricultural Viability					
		Wetlands	Fish/Wildlife Habitat Conservation Areas	Critical Aquifer Recharge Areas	Geologically Hazardous Areas (Erosion)	Frequently Flooded Areas	Soil Erosion	Soil Condition	Soil Health[1]	Hydrology	Water Quality	Habitat	WET	FFA	CARA	GHA	HCA	Soil Health	Prevent Soil Loss	Moisture Management	Weed/ Pest Management	Pollinator/ Beneficial Organisms	Yield/ Fertility Management
313	Waste Storage Facility	0.92	0.00	1.20	0.00	0.75	0.00	1.00	0.50	1.00	1.75	0.00											
315	Herbaceous Weed Control	1.14	1.67	0.00	3.20	1.32	3.20	0.00	1.60	2.00	-0.25	1.67											
325	Seasonal High Tunnel	-1.00	0.00	0.00	-1.00	-0.60	1.00	0.00	0.50	0.00	0.00	0.00					x			x			
327	Conservation Cover	2.61	3.33	2.20	3.00	2.84	**3.00**	3.33	3.17	**1.40**	**3.11**	3.33	x	x		x	x	x	x		x	x	
328	Conservation Crop Rotate	1.78	2.00	1.20	4.00	2.34	4.00	2.33	3.17	1.60	1.75	2.00	x			x	x	x	x	x	x	x	x
329	Residue and Tillage Management - No-till/ Strip Till/ Direct Seed	1.82	1.67	0.00	3.00	2.09	**3.00**	2.00	2.50	0.80	**3.00**	1.67	x	x	x	x	x	x	x	x			x
340	Cover Crop	2.13	2.00	2.40	3.67	2.26	3.67	1.25	2.46	1.40	**3.00**	2.00	x	x	x	x	x	x	x	x	x	x	x
342	Critical Area Planting	1.67	2.00	0.40	4.60	2.45	4.60	2.67	3.63	0.00	**3.00**	2.00				x							
345	Residue Management - Mulch Till	2.00	1.67	0.00	3.00	2.13	**3.00**	**1.67**	2.33	1.33	**3.00**	1.67	x	x	x	x	x	x	x	x			x
350	Sediment Basin	0.00	-0.33	-1.00	1.33	0.27	1.33	0.00	0.67	-0.67	1.00	-0.33											
367	Roofs and Covers	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	-1.00	1.00	0.00											
376	Fileld Operations Emissions Reduction	0.00	0.00	0.00	2.50	0.50	**2.50**	0.00	1.25	0.00	0.00	0.00	x	x		x	x	x	x	x	x	x	x
380	Windbreak/Shelterbreak	2.41	3.00	0.20	2.67	2.45	2.67	2.33	2.50	2.83	1.40	3.00	x	x		x	x	x	x	x	x	x	x
382	Fence	0.00	1.00	0.00	1.00	1.40	1.00	**3.00**	2.00	0.00	2.00	**1.00**	x			x	x		x			x	
383	Fuel Break	-0.53	0.40	-0.20	-1.00	-0.92	-1.00	-2.00	-1.50	-1.00	-1.00	0.40									x		
384	Woody Residue Treatment	0.67	0.00	0.00	1.00	0.30	1.00	-1.50	-0.25	1.00	1.00	0.00									x		
386	Field Border	1.48	2.00	0.80	2.50	1.79	2.50	2.00	2.25	1.00	1.43	2.00	x	x	x	x	x		x	x			x
390	Riparian Herbaceous Cover	2.11	3.50	2.20	2.25	2.38	2.25	3.33	2.79	0.33	2.50	3.50	x	x		x	x		x		x	x	
391	Riparian Forest Buffer	2.50	4.00	1.80	2.60	2.49	2.60	2.33	2.47	0.67	2.83	4.00	x	x		x	x		x		x	x	
393	Filter Strip	1.45	2.00	1.20	0.00	1.87	0.00	5.00	2.50	0.00	2.36	2.00	x	x		x	x		x		x	x	
395	Stream Habitat Improvement and Management	1.67	3.00	0.00	5.00	2.00	5.00	0.00	2.50	0.00	2.00	3.00	x	x		x	x		x		x	x	
402	Dam	0.50	1.50	-0.20	1.50	0.40	1.50	-1.00	0.25	0.25	-0.25	**1.50**		x	x	x	x		x		x		
412	Grassed Waterway	1.61	1.00	0.00	3.33	1.83	3.33	1.00	2.17	2.50	1.33	1.00		x	x	x	x		x		x		
422	Hedgerow Planting	2.44	4.00	0.00	1.00	1.97	1.00	1.50	1.25	2.00	1.33	4.00	x	x	x	x	x		x	x			x
430	Irrigation Pipeline	0.83	0.00	0.80	2.00	0.90	2.00	0.00	1.00	1.33	1.14	0.00			x				x				x
441	Irrigation system, microirrigation (No)	1.67	1.00	2.00	0.00	1.20	**0.00**	1.00	0.50	**2.00**	**2.00**	**1.00**	x		x	x	x		x	x			x
442	Sprinkler System	1.60	1.00	1.40	2.00	1.46	2.00	0.50	1.25	**2.25**	1.55	1.00	x		x	x	x	x	x	x			x
449	Irrigation Water Management	2.68	3.50	2.00	3.00	2.51	**3.00**	1.50	2.25	**2.00**	**2.55**	**3.50**	x		x	x	x						
472	Access Control	1.73	2.00	0.60	3.40	2.22	3.40	2.50	2.95	1.75	1.44	2.00	x	x	x	x	x	x	x		x	x	x
490	Tree/Shrub Site Preparation	0.50	0.00	-0.20	-1.25	-0.25	-1.25	-1.50	-1.38	2.00	-0.50	0.00	x	x		x	x				x	x	
500	Obstruction Removal	0.00	-2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	-2.00											
512	Pasture and Hayland Seeding	1.00	1.00	0.00	1.00	1.10	1.00	1.50	1.25	1.00	1.00	1.00	x	x	x	x	x	x	x	x	x	x	x
516	Pipeline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			x	x	x						x
528	Prescribed Grazing	2.33	3.00	2.00	3.00	2.60	3.00	**3.00**	3.00	1.50	**2.50**	**3.00**	x	x	x	x	x		x				x
533	Pumping Plant	0.67	0.00	0.00	0.00	0.80	0.00	2.00	1.00	2.00	0.00	0.00		x					x		x		x
550	Range Planting	1.58	2.67	1.20	3.20	2.19	3.20	3.00	3.10	0.75	1.33	2.67				x	x	x	x		x	x	x
561	Heavy Use Area Protection	-0.11	-1.00	0.00	2.00	0.23	2.00	**-0.50**	0.75	-1.00	**1.67**	**-1.00**				x	x		x				
574	Spring Development	2.02	3.00	0.00	1.00	1.21	1.00	-1.00	0.00	1.80	1.25	3.00		x					x		x		x
578	Stream Crossing	0.17	0.00	0.40	2.00	0.50	2.00	0.00	1.00	0.00	0.50	0.00	x	x		x	x		x				
580	Streambank and Shoreline Protection	0.92	1.50	0.00	4.00	1.35	4.00	0.00	2.00	0.00	1.25	1.50				x			x				
582	Open Channel	0.50	-0.50	0.00	2.00	0.70	2.00	0.00	1.00	2.67	-0.67	-0.50		x			x		x				
584	Channel Bed Stabilization	1.42	1.25	0.00	2.00	1.25	2.00	0.00	1.00	2.00	1.00	1.25				x			x				
587	Structure for Water Control	1.67	2.00	0.00	0.00	1.00	0.00	0.00	0.00	2.00	1.00	2.00			x					x			
588	Cross wind Ridges	0.33	0.00	0.00	4.00	1.20	4.00	1.00	2.50	0.00	1.00	0.00				x			x				
590	Nutrient Management	1.17	0.00	2.80	0.00	1.03	0.00	1.67	0.83	0.00	3.50	0.00			x		x	x					x
595	Pest Management	2.00	2.00	1.00	2.00	2.00	2.00	2.00	2.00	0.00	4.00	2.00			x		x	x			x	x	
600	Terrace	0.72	1.00	-1.60	2.60	1.05	2.60	0.50	1.55	0.80	0.36	1.00				x			x				
601	Vegetative Barrier	0.87	1.00	0.00	2.00	0.52	2.00	-2.00	0.00	0.00	1.60	1.00	x	x	x	x	x		x	x			x
612	Tree/Shrub Establishment	2.19	3.00	2.00	3.60	2.50	3.60	2.33	2.97	1.50	**2.08**	**3.00**	x		x	x	x		x			x	
612	Tree Planting	2.19	3.00	2.00	3.60	2.50	3.60	2.33	2.97	1.50	2.08	3.00	x		x	x	x		x			x	
614	Watering Facility	1.90	4.00	0.20	2.20	1.58	2.20	0.00	1.10	0.00	1.71	4.00					x						x
642	Water Well	0.67	1.00	0.00	2.00	1.00	2.00	1.00	1.50	2.00	-1.00	**1.00**					x			x			x
643	Restoration and Management of Rare and Declining Habitats	2.00	4.00	0.00	2.25	1.65	**2.25**	**0.00**	1.13	0.00	2.00	4.00					x				x	x	
644	Wetland Wildlife Habitat Management	2.67	4.00	0.00	0.00	1.60	0.00	0.00	0.00	2.00	2.00	4.00	x				x		x		x	x	
645	Upland Wildlife Habitat Management	2.17	5.00	0.00	2.40	1.78	2.40	0.00	1.20	-0.50	2.00	5.00					x		x		x	x	
647	Early Successional Habitat Development/Management	1.00	4.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	-1.00	4.00					x				x	x	
659	Wetland Enhancement	2.50	4.00	0.40	0.00	1.70	0.00	1.00	0.50	2.00	1.50	4.00	x				x		x		x	x	

Notes:
1. Soil health function scores are based on the average scores for Soil Condition and Soil Erosion as summarized in Attachment 1.
2. Bold text indicates adjustments based on local conditions and best professional judgement
CARA: Critical Aquifer Recharge Areas
CPPE: conservation practice physical effect
FFA: Frequently Flooded Areas
GHA: Geologically Hazardous Areas
HCA: Fish and Wildlife Habitat Conservation Areas
NRCS: Natural Resources Conservation Service
WET: Wetlands

Appendix D
Existing and Related Plans, Programs, and Regulations

APPENDIX D: Existing and Related Plans, Programs, and Regulations

The Growth Management Act (GMA) was passed by the Washington State legislature in 1990 to help the state manage the growth of development and activities that have the potential to affect sensitive environments and species, including critical areas. The Voluntary Stewardship Program (VSP) is part of the GMA, but was also written to work with other existing programs, plans, and applicable rules and regulations. This appendix provides an overview of the existing resources used in the Franklin County VSP Work Plan and describes how they relate to other applicable rules and regulations (the regulatory environment).

Existing Conservation Programs

As described in the VSP Work Plan, the VSP provides a voluntary framework for critical areas protection and enhancement actions carried out by agricultural producers while maintaining and improving agricultural viability. Other similar programs are available to agricultural producers that are designed to incentivize protection and enhancement of critical areas through conservation practices. The availability of these programs is variable, as they are heavily influenced by the federal and state program funding, regulatory environment, industry standards, and the agricultural market. Many of these programs have been in place since the July 22, 2011, baseline and have contributed to conservation practices being implemented across Franklin County.

There are a variety of voluntary incentive programs for agricultural producers provided by federal, state, and local entities. The VSP was written to be compatible with existing conservation programs to achieve protection and enhancement of critical areas. Table 1 includes a summary of federal programs and Table 2 includes a summary of state and local programs available to agricultural producers. These tables provide a general representation of available federal, state, and local programs and are not intended to provide an exhaustive list.

The following list includes international organizations that offer a variety of voluntary conservation and certification programs to agricultural producers:

- **GLOBALG.A.P.:** GLOBALG.A.P. is an international non-profit organization that provides a voluntary certification for eligible crops and livestock that meet or exceed 16 standards for safe and environmentally sound agricultural practices.
- **Safe Quality Food Institute (SQFI):** SQFI offers certifications recognized by the Global Food Safety Initiative for best agricultural and livestock practices.
- **PrimusLabs:** PrimusLabs, located in North and South America, is a food safety company that provides a Good Agricultural Practices (GAP) auditing program that certifies agricultural producers who comply with standard operating procedures for food safety.

- **Farmed Smart:** The Pacific Northwest Direct Seed Association oversees the Farmed Smart Program, which is designed to certify producers who use sustainable practices. The program defines conservation standards and provides educational tools to producers regarding the environmental benefits of direct seeding.

Table 1
Federal Conservation Programs

Lead	Description	Program	Details
Natural Resources Conservation Service (NRCS)	NRCS provides technical and financial assistance to help agricultural producers make and maintain conservation improvements on their land. NRCS also offers conservation easement programs and partnerships to leverage existing conservation efforts on farm lands.	**Environmental Quality Incentives Program (EQIP)**[1]	Voluntary program providing financial and technical assistance for agricultural producers to plan and implement conservation practices improving soil, water, plant, animal, air, and related natural resources.
		Conservation Stewardship Program (CSP)[2]	Voluntary program providing technical assistance for agricultural and forest landowners to develop plans for conservation, management, and enhancement activities.
		Agricultural Conservation Easement Program (ACEP)[3]	Provides conservation partners with financial and technical assistance through agricultural land easements to restore, protect, and enhance wetlands.
		Agricultural Water Enhancement Program (AWEP)[4]	Voluntary program providing financial and technical assistance to agricultural producers for implementing agricultural water-enhancement activities.
		Wildlife Habitat Incentive Program (WHIP)[5]	Voluntary program for wildlife habitat conservation and enhancement on agricultural land, nonindustrial private forest land, and Native American land.
Farm Service Agency (FSA)	FSA oversees several voluntary, conservation-related programs that work to address several agriculture-related conservation measures.	**Conservation Reserve Program (CRP)**[6]	Voluntary reserve program to conserve environmentally sensitive land through agricultural protections and plant species to improve environmental health.
		Conservation Reserve Enhancement Program (CREP)[7]	Similar to the CRP, this voluntary program targets high-priority conservation issues. The contract period is typically 10 to 15 years.

[1] www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/
[2] www.nrcs.usda.gov/csp
[3] www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/acep/
[4] www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/whip/
[5] www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/awep/
[6] www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/
[7] www.fsa.usda.gov/FSA/webapp?area=home&subject=lown&topic=cep

Table 2
State and Local Conservation Programs

Lead	Description	Program(s)	Details
Washington State Conservation Commission (WSCC)	WSCC works with conservation districts (CDs) to provide voluntary, incentive-based programs for implementation of conservation practices. WSCC supports the CDs through financial and technical assistance; administrative and operational oversight; program coordination; and promotion of CDs activities and services.	**Coordinated Resource Management (CRM) Program**[8]	Voluntary and locally led program for landowners seeking to resolve land-use and natural resource issues through local coalitions and consensus building.
		Irrigation Efficiencies Grant Program (IEGP)[9]	Provides financial incentives to landowners willing to install irrigation systems that save water.
		Natural Resource Investments (non-shellfish) Grants[10]	Grant program for landowners to complete natural resource enhancement projects necessary to improve water quality in non-shellfish growing areas.
		Office of Farmland Preservation (OFP)[11]	The OFP identifies and addresses farmland loss through agriculture conservation easement programs, providing technical assistance, developing farm transition programs, and providing data and analysis on trends.
Washington State Department of Fish and Wildlife (WDFW)	WDFW provides financial assistance for habitat projects that restore and/or preserve fish and wildlife habitat through funding opportunities.	**Aquatic Lands Enhancement Account (ALEA)**[12] **Volunteer Cooperative Grant Program**	Grant program for qualifying landowners who undertake projects that benefit Washington State's fish and wildlife resources.
		Partnership for Pheasants[13]	Voluntary habitat enhancement and public access program that provides annual rental payments to landowners who plant and maintain pheasant habitat and allow public hunting.
Washington State Department of Ecology (Ecology)	Ecology provides funding for water-quality improvement and protection projects.	**Water Quality Financial Assistance Program**[14]	Grant and loan program for high-priority projects to protect and improve the health of Washington State waters.
		Farmed Smart Partnership[15]	Regional voluntary program overseen by the Pacific Northwest Direct Seed Association, in coordination with Ecology, that certifies agricultural producers for environmentally friendly and sustainable dryland agriculture practices.

[8] http://scc.wa.gov/coordinated-resource-management/
[9] http://scc.wa.gov/iegp/
[10] http://scc.wa.gov/wq-nonshellfish/
[11] http://scc.wa.gov/office-of-farmland-preservation/
[12] http://wdfw.wa.gov/grants/alea/index.html
[13] http://wdfw.wa.gov/grants/pheasants/index.html
[14] http://www.ecy.wa.gov/programs/wq/funding/funding.html
[15] http://www.ecy.wa.gov/programs/wq/nonpoint/Agriculture/farmedsmart.html

Lead	Description	Program(s)	Details
Washington State Recreation and Conservation Office (WRCO)	WRCO provides funding to protect aquatic lands and for projects aimed at achieving overall salmon recovery, including habitat projects and other activities that result in sustainable and measurable benefits for salmon and other fish species.	**Aquatic Lands Enhancement Account (ALEA)**[16]	Local and state agencies and Native American Tribes can apply for grants to fund aquatic habitat-enhancement projects.
		Salmon Recovery Funding Board Salmon Recovery Grants[17]	Grant program for eligible parties seeking to improve important habitat conditions or watershed processes to benefit salmon and bull trout.
		Farmland Preservation Grants[18]	Grant program for local agencies and non-profits to buy development rights on farmlands to ensure the lands remain available for farming in the future.
Franklin Conservation District (FCD)	FCD works through voluntary, incentive-based programs to assist landowners and agricultural operators with the conservation of natural resources throughout the district.	**Irrigation Water Management Program**[19]	Program offering irrigation water management technical assistance for landowners and producers.
		Livestock Program[20]	Program offering technical assistance for dairy farms to prepare and implement Dairy Nutrient Management Plans, Odor and Fly Control Plans, pollution potential evaluations, permit assistance, cost-share assistance, and design of best management practices.
		Wildlife Program[21]	Program involving farmers, landowners, and managers for wildlife habitat and protection.
Washington State University (WSU) Extension	The WSU Extension program connects agricultural and natural resource stakeholders and industries, as well as the general public, to extend research-based information and conduct locally relevant applied research in the fields of agriculture and natural resource sciences.	**Agriculture and Natural Resources Program**[22]	Program providing technical assistance, research, and education to producers.

[16] http://www.rco.wa.gov/grants/alea.shtml
[17] http://www.rco.wa.gov/grants/sal_rec_grants.shtml
[18] http://www.rco.wa.gov/grants/farmland.shtml
[19] https://www.franklincd.org/irrigation-water-management
[20] https://www.franklincd.org/livestock
[21] https://www.franklincd.org/wildlife
[22] http://anr.cw.wsu.edu/

Related Plans and Programs

As required by Revised Code of Washington (RCW) 36.70A.720(1)(a), the VSP Work Plan must incorporate applicable water quality, watershed management, farmland protection, and species recovery data and plans. Table 3 includes a summary of the planning documents and programs that were referenced for the VSP Work Plan and appendices. This includes watershed management and wildlife management programs prepared specific to Franklin County.

The County includes portions of three major watersheds, which are known as Water Resource Inventory Areas (WRIAs). Most of the County is in the Esquatzel Coulee (WRIA 36). The eastern portion of the County is in the Lower Snake (WRIA 33), and a small part of the northeastern portion of the County is in the Palouse (WRIA 34). Within the three watersheds, there are two Washington State Department of Ecology water quality improvement projects or Total Maximum Daily Loads (TMDLs) in process on the Lower Snake River for dioxin and total dissolved gas.[23]

Table 3
Summary of Planning Documents

Plan or Program	Date	Author/Agency	Description
Franklin Conservation District 5-Year Strategic Plan (2015-2020)	2015	Franklin Conservation District	The 5-Year Strategic Plan outlines Franklin Conservation District's vision and provides a roadmap for accomplishing priority natural resource conservation needs. The plan also includes measures of success, measurable goals, milestones, timelines, and actions for this 5-year period.
Franklin Conservation District FY2018 Annual Work Plan	2017	Franklin Conservation District	The FY2018 Annual Work Plan describes the natural resource priorities for 2018, including specific goals and target dates for implementation.
Franklin County Shoreline Master Program Update: Shoreline Inventory, Analysis, and Characterization Report	2014	Anchor QEA, LLC	The Shoreline Inventory, Analysis, and Characterization Report provides a baseline of shoreline ecological functions throughout the county as part of the Shoreline Master Program update.
Final Draft Shoreline Master Program: Franklin County Shoreline Master Program Update	2016	Anchor QEA, LLC	The Shoreline Master Program includes shoreline goals and policies for management and protection of shorelines of the state located within the county.
Final Draft Restoration Plan: Franklin County Shoreline Master Program Update	2016	Anchor QEA, LLC	The Restoration Plan builds off a previous inventory and analysis of shoreline ecosystem functions and identifies how and where shoreline ecological functions can be

[23] http://www.ecy.wa.gov/programs/wq/tmdl/TMDLsbyCounty/franklin.html

Plan or Program	Date	Author/Agency	Description
			protected, restored, or enhanced within the county's shoreline jurisdiction.
Groundwater Management Area Plan	2001	Columbia Basin Groundwater Management Area of Adams, Franklin and Grant Counties, Washington	The Groundwater Management Area Plan for Adams, Franklin, and Grant Counties provides a framework for addressing groundwater contamination issues. The plan characterizes groundwater quality and quantity in the area, provides the organization and administration behind the plan, and identifies goals, objectives, and measures of success for groundwater management in the area.
Management Recommendations for Washington's Priority Habitats: Riparian	1997	Washington State Department of Fish and Wildlife	The riparian habitat management plan provides statewide riparian management recommendations based on the best-available science. This plan describes impacts from various activities, including agricultural practices and specific management recommendations.
Management Recommendations for Washington's Priority Habitats: Managing Shrub-steppe in Developing Landscapes	2011	Washington State Department of Fish and Wildlife	The shrub-steppe management plan provides statewide shrub-steppe habitat management recommendations based on the best-available science. This includes long-range planning and site-specific measures.
Washington State Recovery Plan for the Greater Sage Grouse	2004	Washington State Department of Fish and Wildlife	The greater sage grouse recovery plan prescribes strategies to recover the species such as protecting and restoring habitat.
Natural Heritage Program	NA	Washington State Department of Natural Resources	The Natural Heritage Program provides conservation methods for protecting rare and important species endemic to Washington State.

Federal, State, and Local Regulations that Apply to Agriculture

The VSP is provided as an alternative to protecting critical areas used for agricultural activities through development regulations under the Growth Management Act. Despite its voluntary nature, it is still the intent of the VSP to improve, and not limit, "compliance with other laws designed to protect water quality and fish habitat," per RCW 36.70A.700 and 36.70A.702. Per RCW 36.70A.720, the development regulations used to achieve the goals and measurable benchmarks for protection of critical areas must be incorporated into the VSP Work Plan.

Tables 4 and 5 include a summary of federal, state, and local development regulations that are used to achieve the goals and measurable benchmarks of the VSP Work Plan. This list includes the most common environmental regulations affecting agriculture. The list does not include all regulations potentially impacting agricultural producers in the County. For instance, regulations on taxation, employment practices, marijuana production, and other regulations are not included. Because no regulations are enforced via the VSP, regulatory enforcement in the County provides a "regulatory backstop." For example, the Washington State Department of Ecology will continue to regulate wetland conversions on agricultural lands through the local Water Pollution Control Act.[24] Continued compliance with these regulations provides assurance the functions and values of critical areas are protected.

As illustrated in Figure 1, the VSP is intended to balance critical areas protection and agricultural viability at the County level through voluntary actions by agricultural producers. 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.

[24] Washington State Department of Ecology, 2013. The Voluntary Stewardship Program and Clean Water. Available at: https://fortress.wa.gov/ecy/publications/publications/1310030.pdf.

Figure 1
Balanced Approach of Critical Areas Protection and Agricultural Viability

Table 4
Federal Regulations that Apply to Agriculture

Regulation(s)	Agency	Description	VSP Intersect
Agricultural Act (Farm Bill)[25]	U.S. Department of Agriculture	The Farm Bill, reauthorized in 2014, eliminates direct payments and continues crop insurance.	The Farm Bill includes the "swampbuster" conservation policy prohibiting land owners from converting wetlands to cropland. The "sodbuster" provision requires participating parties to maintain a specified level of conservation.
Clean Water Act (CWA)[26]	U.S. Environmental Protection Agency (USEPA); regulated locally by Washington State Department of Ecology	The CWA regulates discharges of pollutants into waters of the United States, including discharges of dredge or fill material in wetlands. CWA exemptions for agriculture are designed consistent with and support existing U.S. Department of Agriculture programs.	Compliance with the CWA maintains or enhances water quality, which in turn benefits critical areas, including wetlands and fish and wildlife habitat conservation areas.
Safe Drinking Water Act (SDWA)[27]		The SDWA protects public drinking water supplies in the United States, including sole-source aquifers. The USEPA provides technical and financial resources under the Clean Water State Revolving Fund for improving water quality, protecting drinking water sources, and controlling nonpoint source pollution.	The SDWA is designed to protect critical aquifer recharge areas, an important source for drinking water that is vulnerable to contamination.
National Pollution Discharge Elimination System (NPDES)[28]		NPDES is promulgated under the CWA to regulate discharges to waters of the United States from animal feeding operations.	Regulated discharges to waters of the United States helps to protect water quality in critical areas, including wetlands and fish and wildlife habitat conservation areas.

[25] https://www.fsa.usda.gov/programs-and-services/farm-bill/index
[26] https://www.epa.gov/laws-regulations/summary-clean-water-act
[27] https://www.epa.gov/sdwa
[28] https://www.epa.gov/npdes

Regulation(s)	Agency	Description	VSP Intersect
Endangered Species Act (ESA)[29][30]	National Marine Fisheries Service and the U.S. Fish and Wildlife Service	The ESA protects threatened and endangered species and critical habitat throughout the United States.	ESA-listed species and critical habitat are protected through avoidance and minimization measures such as the "no-spray" pesticide buffer zones near ESA-listed salmon-bearing waterbodies. The no-spray buffer zones are 60 feet for ground and 300 feet for aerial pesticide applications.
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)[31]	USEPA	FIFRA regulates pesticide distribution, sale, and use and includes labeling and registration requirements.	Compliance with FIFRA is intended to maintain or enhance water quality, which in turn benefits critical areas, including wetlands, fish and wildlife habitat conservation areas, and critical aquifer recharge areas.
National Emissions Standards for Hazardous Air Pollutants (NESHAP)[32]	USEPA	NESHAP regulates hazardous air pollutant emissions, including from new and existing facilities that manufacture organic pesticide active ingredients used in herbicides, insecticides, and fungicides.	These regulations are intended to reduce or eliminate hazardous air pollutant emissions with the potential to spread via aerial application to critical areas, including wetlands and fish and wildlife habitat conservation areas.

[29] http://www.nmfs.noaa.gov/pr/laws/esa/
[30] https://www.fws.gov/endangered/
[31] https://www.epa.gov/laws-regulations/summary-federal-insecticide-fungicide-and-rodenticide-act
[32] https://www.epa.gov/stationary-sources-air-pollution/national-emission-standards-hazardous-air-pollutants-neshap-9

Table 5
State and Local Regulations that Apply to Agriculture

Regulation(s)	Agency	Description	VSP Intersect
Revised Code of Washington (RCW)			
Title 15 Agriculture and Marketing	Washington State Department of Agriculture	RCW Title 15 includes general regulations pertaining to agricultural practices.	• Regulations cover pest and disease control, fertilizers, and commodity commissions
Title 16 Animals and Livestock	Washington State Department of Agriculture	RCW Title 16 includes general regulations pertaining to animals and livestock practices.	• Regulations cover range areas, meat licensing, feed lot certification, and fencing
Title 17 Weeds, Rodents, and Pests	Washington State Noxious Weed Control Board*	RCW Title 17 includes general regulations pertaining to weed, rodent, and pest control.	• RCW Title 17.06 establishes intercounty weed districts
Title 36 Counties	*Various*	RCW Title 36 includes regulations pertaining to counties including the VSP.	• RCW Titles 36.70A.700-904 comprise the VSP, a program designed to promote plans to protect and enhance critical areas while maintaining and improving agricultural viability
Title 77 Fish and Wildlife	Washington Department of Fish and Wildlife	RCW Title 77 includes fish and wildlife enforcement regulations.	• Salmon recovery and enhancement programs include habitat projects and plans, including voluntary, incentive-based enhancement programs • In-water construction activities (i.e., hydraulic projects) are regulated under RCW Title 77.55
Title 87 Irrigation	Irrigation Districts	RCW Title 87 regulates irrigation and irrigation districts.	• RCW Title 87.03 establishes irrigation and improvement districts
Title 89 Reclamation, Soil Conservation, and Land Settlement	Conservation Districts, Office of Farmland Preservation, and Irrigation Districts	RCW Title 89 includes general regulations pertaining to reclamation and local conservation districts.	• RCW Title 89.08 establishes conservation districts • RCW Title 89.10 establishes the Office of Farmland Preservation • RCW Title 89.12 includes adoption of the Columbia Basin Project Act and related regulations

Regulation(s)	Agency	Description	VSP Intersect
Title 90 Water Rights – Environment	*Various*	RCW Title 90 regulates various aspects of water rights and appropriation for public and industrial purposes.	• RCW Titles 90.42-46 include regulations pertaining to water resource management, regulation of public groundwater, and reclaimed water use • RCW Title 90.48 includes the Water Pollution Control Act which regulates agricultural discharges to surface waters and wetlands • RCW Title 90.64 includes dairy nutrient management regulations • RCW Title 90.90 includes the Columbia River Basin water supply rules for allocation and development of water supplies
Washington Administrative Code (WAC)			
Title 16	Washington State Department of Agriculture	WAC Title 16 includes Washington State Department of Agriculture rules pertaining to agriculture regulation, certification, and marketing.	• WAC Chapters 16-200 through 16-202 include standards for fertilizer and pesticide usage • WAC Chapter 16-611 includes standards for nutrient management
Title 173	Washington State Department of Ecology	WAC Title 173 includes Washington State Department of Ecology rules for air and water quality protection.	• WAC Chapters 173-15 through 173-27 include state Shoreline Management Act rules and permitting requirements. The County currently implements the Shoreline Master Program under these state rules • WAC Chapter 173-134A sets the Quincy groundwater management and zones • WAC Chapter 173-158 includes floodplain management rules • WAC Chapters 173-166, 173-170, and 173-173 include rules for drought relief programs, agricultural water supply facilities, and measuring and reporting water usage • WAC Chapter 173-220 includes National Pollution Discharge Elimination System rules for discharges to waters of the state • WAC Chapter 173-430 includes rules for agricultural burning

Regulation(s)	Agency	Description	VSP Intersect
Title 220 and 232	Washington State Department of Fish and Wildlife	WAC Titles 220-232 include Washington State Department of Fish and Wildlife rules for management of fish and wildlife species and habitat.	• WAC Chapter 220-410 defines game management areas, including the Game Management Units in Franklin County • WAC Chapter 220-620 describes the volunteer cooperative fish and wildlife enhancement program • WAC Chapter 220-660 includes the Washington State Hydraulic Code which regulates in-water construction activities (hydraulic projects) through Hydraulic Project Approvals • WAC Chapter 232-28 includes wildlife interaction rules, including those pertaining to damage of commercial crops and livestock
Title 246	Washington State Department of Health	WAC Title 246 includes Washington State Department of Health rules, including those for protection of water systems.	• WAC Chapters 246-290 and 246-291 include rules for Group A and B public water supplies and water systems, respectively; these include regulations for using greywater for irrigation purposes
Franklin County Regulations			
Franklin County Code (FCC) 18.08.	Franklin County Planning and Building Department	Franklin County Critical Area/Resource Area Protection Standards	• FCC 18.08.120 exempts existing and ongoing agricultural operations occurring within critical areas and their buffers from the Critical Area/Resource Area Protection Standards. If agricultural activities cease, then that land would be subject to the ordinance.
FCC 18.16	Franklin County Planning and Building Department	Franklin County Shorelines Master Program Update	• The Shoreline Master Program covers new or additional uses within shorelines of the state (defined as 200 feet from mean higher high water) and does not limit or modify existing or ongoing agricultural practices. The VSP applies to critical areas both inside and outside of the shoreline jurisdiction.

*Includes agencies responsible for overseeing agriculture-specific regulations. Other agencies may be assigned jurisdiction for non-agriculture related regulations described therein.

Appendix E
Franklin County VSP Outreach Plan

Appendix E: Franklin County VSP Outreach Plan

The Franklin County Voluntary Stewardship Program (VSP) Outreach Plan is intended to provide a framework for outreach both during plan development and implementation. This will ensure that outreach to the agricultural community and other interested parties are involved in all aspects of the VSP.

Formation of the Work Group and Work Group Meetings

Work Group members were selected to provide a thorough representation of agricultural sectors, including: dairy, dryland, irrigated row-crop, cattle, tree fruit, and irrigation districts. In addition, agricultural interest groups participated, including the Washington State Potato Commission and the Washington State Farm Bureau. Franklin Conservation District (FCD) also encouraged environmental interest group participation. However, due to the limited number of environmental groups in Franklin County, FCD also allowed Washington Department of Fish and Wildlife to participate as a voting member. The current members have served throughout the VSP Work Plan process.

The following were groups or types of producers have participated in the Work Group, most since August 2016:

- Debbie Berkowitz, Lower Columbia Basin Audubon Society
- Brian Cochrane, dryland wheat producer
- Kent McMullen, Franklin County Natural Resource Advisory Council
- Commissioner Rick Miller, Franklin County
- Mark Nielson, Franklin County Water Conservancy Board
- Mark Wieseler, FCD
- Dave Solem, South Columbia Basin Irrigation District
- James Alford, Franklin County Farm Bureau
- Matt Harris, Washington State Potato Commission
- Tim Waters, Washington State University Extension
- Case VanderMeulen, dairy producer
- Michael Ritter, Washington State Department of Fish and Wildlife

The following includes Work Group alternates that were put forward to support the planning process:

- Rick Leaumont, Lower Columbia Basin Audubon Society
- Romona Rommereim, Franklin County Natural Resource Advisory Council
- Lee Morris, Franklin County Water Conservancy Board

The Work Plan was developed through a series of Work Group meetings listed below.

- August 25, 2016 – Informational Kick-off Meeting
- September 22, 2016 – Work Group Meeting

- October 27, 2016 – Work Group Meeting
- December 8, 2016 – Work Group Meeting
- January 26, 2017 – Work Group Meeting
- February 23, 2017 – Optional Work Group Meeting (technical discussion)
- March 23, 2017 – Work Group Meeting
- April 28, 2017 – Work Group Meeting
- May 25, 2017 – Work Group Meeting and Farm Tour
- June 22, 2017 – Work Group Meeting
- November 2, 2017 – Work Group Meeting
- February 5, 2018 – Work Group Meeting

Public Communication and Outreach Materials

Type	Description
Create email list	FCD created an email list containing all interested parties (e.g., Work Group, Technical Committee, public) for the VSP Work Plan process. All meeting notices and materials as well as documents will continue to be provided to the email list. Anyone may subscribe to the email list from the FCD VSP website: http://www.franklincountyvsp.com/
Update website and media	FCD created a webpage specifically for the VSP and will continually update it with meeting notices and materials as well as documents. Additional information will be added for the implementation phase. FCD also has links to social media, including Facebook and Instagram, on which they frequently engage with the public. The website, with links to social media, can be found at: http://www.franklincountyvsp.com/
News and Success Stories Publications	FCD publishes news and success stories on their website that is publicly available. Information about VSP has been and will continue to be included. Anyone can view this information at the FCD website: https://www.franklincd.org/news
VSP Checklist	The VSP Checklist was completed as part of the VSP Work Plan (see Attachment 1). This checklist will help facilitate participation in VSP and tracking of currently ongoing conservation practices. The VSP Checklist may potentially be converted to an online fillable document in the future.
Postcards, Handouts, and Landowner Maps	FCD has sent approximately 1,100 postcards notifying agricultural landowners that they may have acreage that intersects with critical areas. FCD has developed educational handouts outlining typically best management practices that protect and/or enhance critical areas. Landowners who request additional information from the FCD will receive these handouts along with site specific maps outlining critical areas on their lands.
Educational Opportunities	Educational opportunities focused on particular critical area issues and agricultural practices are available to producers at their convenience, for booths at the fair or farmers markets. FCD's educational offerings are described on the FCD website: https://www.franklincd.org/education
Tours	FCD-led annual tours are opportunities to share information with producers, partners, and the public. Tours may include on-farm testing/demonstration and field trials.

Potential Community Meetings or Other Outreach Opportunities

Outreach Opportunity	Description
FCD Meetings	FCD hosts monthly board meetings on the third Tuesday of each month that are available to the public.
County Fair	Host a booth to provide information on the VSP to a broad range for people.
Farmers Markets	Host a booth to provide information on the VSP to a broad range for people.
Association Meetings	Give presentations at association meetings.
Work Group Member Outreach	FCD led outreach activities with members of the Work Group to reach agricultural producers who are comfortable speaking with a fellow producer.
Newspapers	Provide information to producers though posting in local newspapers.

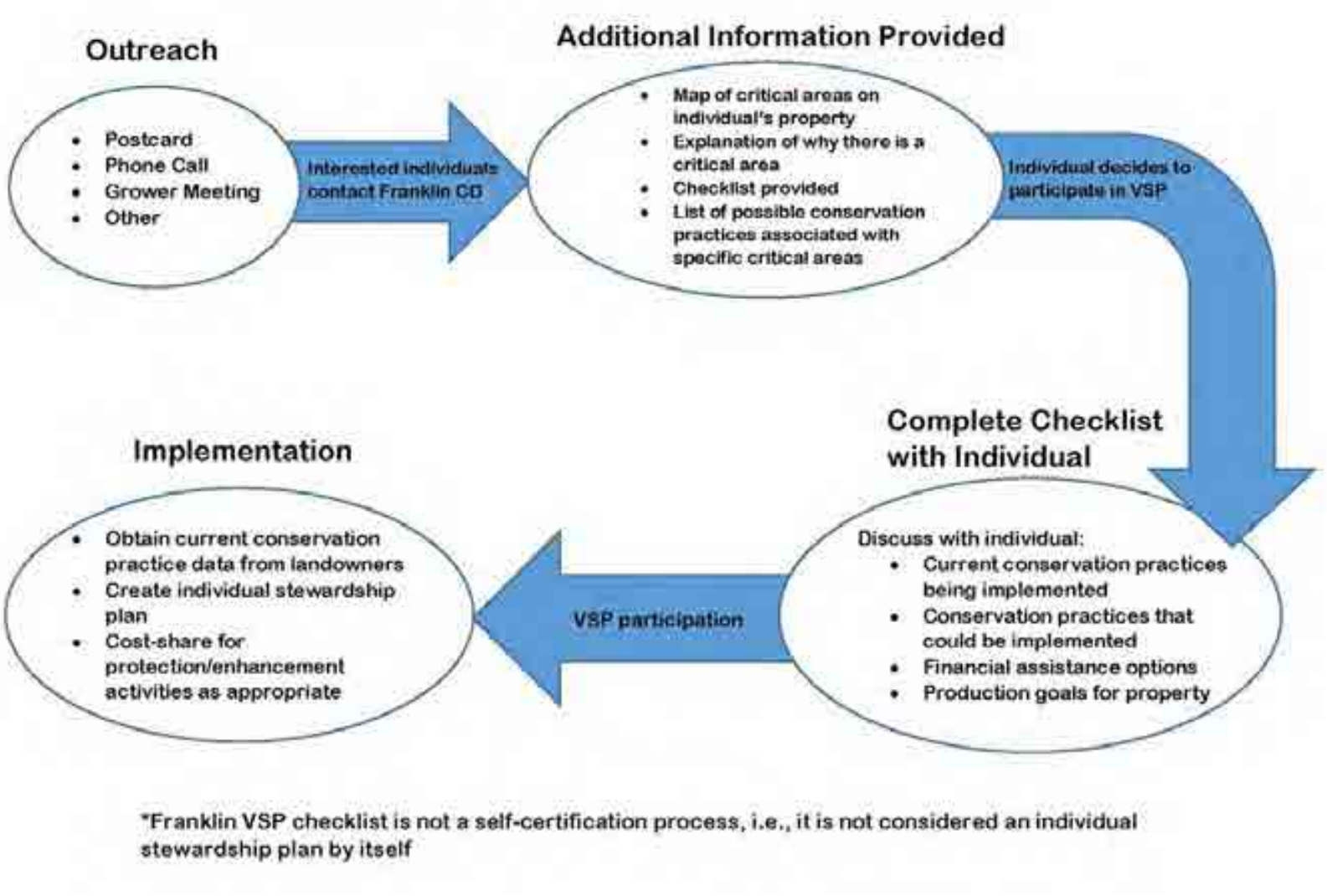
Government Agencies and Agricultural Groups

Coordination with the following agencies and groups help with outreach and implementation:

- Franklin County Natural Resource Advisory Council
- Franklin County Water Conservancy Board
- South Columbia Basin Irrigation District
- Franklin County Farm Bureau
- Washington State Potato Commission
- U.S. Department of Agriculture Natural Resource Conservation Service

FCD's protocol for outreach and use of the VSP checklist in Attachment 1 of the Work Plan during implementation is shown in Figure 1.

Figure 1
Franklin County VSP Checklist Use Protocol



*Franklin VSP checklist is not a self-certification process, i.e., it is not considered an individual stewardship plan by itself

Appendix F
Comment Response Matrix

Franklin VSP Draft Work Plan – Comment Response Matrix

November 2017 DRAFT

Comment matrix updated 11/30/2017

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
1 *	Work Group	ALL	ALL	NA	UNIVERSAL: Include photo captions where appropriate.	Add photo captions throughout document.
2 *	Work Group	TOC	TOC	NA	Change spelling of VSP Work Group Alternate to Kathy (with a "K") Criddle	Revise spelling to Kriddle.
3 *	Work Group	1	3	NA	Change "What happens if I do not participate in VSP?" to "What are the advantages of participating in VSP?" and add "We encourage all producers to participate" near the end. Also, revise to include advantages of participation.	Revise text and add a line about how participation will help connect producers with helpful resources and maintain a non-regulatory approach to conservation.
4 *	Work Group	1	3	NA	For title, revise to "What does it mean to Maintain and Enhance Agricultural Viability"	Revise question title.
5 *	Work Group	1	5	NA	Describe ag viability indicators/enhancement, including indicators for ag viability such as: land in production staying or increasing; connections with community colleges; ag census data (farms, new crops, commodities); important businesses support producers; project expansions; VSP viability.	Include expanded description of ag viability indicators. Anchor QEA will revise the text in a separate document and send to Work Group for any additional input. We will discuss further in our May Work Group meeting.
6 *	Work Group	1	5	NA	Figure 1-1: Add "/Enhancement" after Critical Areas Protection on left scale. On right scale emphasize maintain "or" enhance. [InDesign]	Revise graphic.
7 *	Work Group	1	6	NA	Change to from 28 counties to 27 counties participating.	Revise number of counties.
8 *	Work Group	2	8	NA	Photo: Note that the County is building a pumping plant in this location and power plant upstream. 30,000 AF discharge from wasteway. Suggest replacing with Esquatzel shot or photo showing shoreline/ag intersect [InDesign]	Consider replacing photo.
9 *	Work Group	2	9	NA	Photo: Replace photo with photo of 395 and to the north. This is not local. [InDesign]	Replace photo.
10 *	Work Group	2	11	NA	Major Resource Concern: Remove this text.	Remove text.
11 *	Work Group	2	14	NA	Title: Note spelling of "Critical" and space after "guidance" in wetlands box.	Revise text.
12 *	Work Group	2	17	NA	Need to revise Esquatzel Coulee section to describe wasteway and include caveat that the coulee/wasteway do not constitute a significant critical area or agricultural activities intersect.	Revise text and send around to Work Group for input.
13 *	Work Group	2	17	NA	Add photo caption and change western ground squirrel to "Washington" ground squirrel. [InDesign]	Add caption and revise text.
14 *	Work Group	2	18	NA	Replace photo [InDesign]	Replace photo.
15 *	Work Group	2	19	NA	Add photo caption "Lenwood Farms pollinator habitat planting"; remove grouse and jackrabbit, add burrowing owl. Also, look into Natural Heritage Program species. [InDesign]	Add caption and revise text.
16 *	Work Group	3	20	NA	Note to use RCW language regarding protecting and enhancing critical areas consistently throughout document. Specifically "incentive-based voluntary enhancements." Also, spelling of "Critical" in graphic below should be revised. [InDesign]	Revise mentions of critical areas protection and enhancement throughout document; revise text.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
17 *	Work Group	3	21	NA	Add clarification: Federal ground (not in VSP); state ground (varies – DNR/WDFW agreement for lands to be converted to ag/irrigation under DNR land leases).	Add text clarification to section.
18 *	Work Group	3	21	NA	Under "Privately owned lands" bullet, revise to "Privately owned and managed lands" and note that CBP land is under easement. Add text that "agencies are responsible for managing land per their own protection/enhancement standards. Include footnote that some privately-owned land is under easement (via CBP for example). Coordinate with Bill Eller to clarify if public land excluded or managed differently. Add photos.	Revise text and add photos. Public land is subject to agency policies and protective measures and are not included in VSP. Similarly, CBP/Irrigation District properties where infrastructure, right-of-way, conveyance for operation of the project is not defined as agricultural land or activity under the Shoreline Management Act and would be considered outside of VSP.
19 *	Work Group	3	22	NA	Add photos [InDesign]	Add photos
20 *	Work Group	3	29	NA	Add wintering area.	Check updated PHS information and maps and revise accordingly. Note: Wintering area not included in updated PHS data.
21 *	Work Group	4	47	NA	Consider conversion to urban. WSDA tracks land that is developed. Also, make 563 in bottom-right box of table a negative number "-563."	WSDA can be used as an indicator for reporting purposes but is not sufficient for measuring goals and benchmarks.
22 *	Work Group	4	47	NA	Add text that there can also be refinements in data through time. May not be changes that are actually on the ground.	Revise text.
23 *	D. Berkowitz	1	5	NA	I'm concerned about the statement that 'impacts from these events (market conditions and climate factors) on critical areas will be considered adjustments to the baseline condition, or otherwise accounted for in tracking program performance.' And the statement that 'It is also recognized that in lean years, producers may not be able to afford the costs to implement new practices on their land, and VSP goals should account for these varying conditions.' Any possible change in VSP goals or baseline conditions should require extensive conversations with the work group and the Conservation Commission and shouldn't be automatically included in our work plan. As climate changes, protecting critical areas and species diversity becomes ever more important.	Revise text to clarify that any changes to VSP goals or baseline conditions would be coordinated with and approved by the Work Group.
24 *	D. Berkowitz	1	7	NA	Table 1-1 Outreach Focus. Should include environmental groups (since you are already doing this).	Revise Table 1-1 to include special interest groups.
25 *	D. Berkowitz	2	16	NA	Water quality – 'This function provides clean water for fish and other aquatic species, **terrestrial species (including humans)** as well as clean water for agricultural practices.	Revise text as suggested.
26 *	D. Berkowitz	2	19	NA	Box. Habitats and species in Franklin County. Habitat should include shrub steppe. Species should also include 'uncommon' species (e.g. sagebrush obligate species that are found in Franklin County). Or a note should be made that these are important for protection.	Revise text to include shrub-steppe and a note as suggested.
27 *	D. Berkowitz	3	21, 23	NA	What happens with publicly owned lands that are farmed (I think you were going to be looking into this)	See response to comment No. 18.
28 *	D. Berkowitz	3	23	NA	Table 3-1 footnote 3. It sounds like these could be intermittent streams or wetlands. These can be important for some species, so how are these areas taken into account in the VSP?	The VSP intersect for habitat areas, such as streams and wetlands, is covered in subsequent sections. This data is used for planning purposes but intermittent streams or wetlands that meet the definition in the hydraulic code are the producer's responsibility to protect or enhance as part of implementation.
29 *	D. Berkowitz	3	36	NA	The VSP law is explicit that critical areas are to be protected **and enhanced** while maintaining and improving the long-term viability of agriculture.	We had a similar comment at the Work Group meeting to address this consistently throughout the document. Revise text as suggested.
30 *	D. Berkowitz	3	36	NA	Table 3-2. Does land conversion include/mean urban sprawl?	No. In this case, land conversion for agricultural or conservation practices would help maintain agricultural viability. Good suggestion though and we will revise text to be more clear about that.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
31 *	D. Berkowitz	3	37	NA	Table 3-3. 'No surprises regulatory environment.' How does this statement account for regulations that change with time as new information becomes available? For example, if a pesticide is on the market and new tests indicate a health or environmental concern, then a new (potentially 'surprising') regulation may be warranted.	Mike Ritter had a similar comment below, suggesting revisions to text on Page 55 to "Providing regulatory assurances and support to implement voluntary practices." A change in regulations may affect agricultural viability. But it is important that resources are available to help navigate those changes and minimize the element of surprise to the extent practicable.
32 *	D. Berkowitz	3	38	NA	'Protecting and enhancing agricultural viability will continue to be a key performance measure that must be met during plan implementation.' Certainly protecting agricultural viability is important, but it's my understanding that there are no formal measurable benchmarks for agricultural viability and that success toward meeting agricultural viability goals doesn't affect a County's eligibility to participate in VSP. Agricultural viability aims and activities are meant to help the County plan for resource lands and to help the local agricultural economy.	That is correct. Defining and formally tracking ag viability is not required by VSP. There are a lot of outside factors that affect ag viability outside of the realm of VSP. The aim of VSP is not to hinder ag viability through implementing voluntary conservation practices. Command and control regulations may have the potential to do this. Suggest rewording: "Maintaining agricultural viability will continue to be a key component of implementation of the Work Plan."
33 *	D. Berkowitz	3	38	NA	Fig. 3-7. Other threats – climate change; urban sprawl; loss of pollinators. Also, my understanding is that proposed taxes on carbon didn't include farm products. Climate change is the real threat, not regulations to reduce the extent of climate change.	Agree with other threats and will incorporate. It could still be argued that a carbon tax locally could affect ag viability if it did include fertilizers and pesticides by increasing the price. However, we will edit to be more all-encompassing, perhaps "Increased taxes and regulations on farm supplies".
34 *	D. Berkowitz	5	50	NA	What does it mean to 'reduce regulation surprises associated with priority habitats and species decline'? Would these habitats and species be protected voluntarily?	Priority Habitats and species are typically protected as Fish and Wildlife Habitat Conservation Areas. Counties are mandated by state law (the Growth Management Act) to protect habitats that, "if altered, may reduce the likelihood that the species will persist over the long term." VSP will provide those protections using voluntary actions. If VSP is successful in meeting the protection benchmark no further regulation of agricultural activities will be required by the state/County to protect Fish and Wildlife Conservation Areas.
35 *	D. Berkowitz	5	50-56	NA	Another conservation practice could include managing to protect pollinators, e.g., managing pesticide and herbicide applications to improve habitat/survival for pollinators/birds/wildlife.	This is covered under Nutrient Management, which we will add to the Fish and Wildlife Habitat Protection and Enhancement tables where appropriate.
36 *	D. Berkowitz	5	51	NA	Goal #1 'objective – limit wind erosion of soil.' I was under the impression that wind erosion, while obviously important for farm productivity and air quality, wasn't part of critical areas protection.	Wind erosion areas are not locally recognized Critical Areas, but managing wind erosion would help to protect water quality and wetland functions, which this table is trying to convey. Suggest no change to text here.
37 *	D. Berkowitz	5	55	NA	Goal #5 Protection and enhancement. Please include priority and sensitive species.	Agree with suggested edit, will revise text as suggested.
38 *	D. Berkowitz	5	57	NA	Measurable Benchmarks. We have previously discussed that we need more than just participation for a benchmark that goals are being met. Performance standards should include both implementation (installation of new activities) and effectiveness (i.e., measured effect of action on critical areas). E.g., monitoring of 10 to 15% of farms each year was suggested. Other possibilities could include mapping and aerial photo evaluation with on-the-ground verification, as needed, of practices in place.	These measurable benchmarks are being updated as discussed at the April Work Group meeting. See line items 55-62.
39 *	D. Berkowitz	5	57	NA	Enhancement Benchmarks. My impression is that enhancement goals and benchmarks must be addressed in the work plan. If enhancement goals and benchmarks are not met, additional voluntary actions must be identified and implemented if funding becomes available. Unlike protection goals and benchmarks, enhancement goals and benchmarks are not the test for plan failure.	These measurable benchmarks are being updated as discussed at the April Work Group meeting. See line items 55-62.
40 *	D. Berkowitz	5	59	NA	'Indicators will be reviewed approximately every 5 years to identify if longer term trends are clear.' I think that 'indicator data' would need to be monitored annually so that we know in a timely fashion if the protection goals are being met.	Indicators will be reviewed annually by the CD as discussed at the March Work Group meeting. This is referring to the statutory requirement when monitoring reports are reviewed by the tech panel.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
41 *	D. Berkowitz	5	62	NA	'Additional indicators will be used as those data become available, but only data on the implementation of conservation practices will be collected and maintained as part of the VSP.' I strongly disagree with this statement. Effectiveness of conservation practices is the measure needed to determine if the VSP is actually protecting critical areas.	The CD will continue monitoring as much as they have the resources to conducting monitoring and validation of conservation practices, and through the support of local and state agencies. The CD will use everything available to them. The indicators, along with field verification that practices are having their intended effect, will help the CD determine the effectiveness of VSP, recognizing limitations.
42 *	D. Berkowitz	6	63	NA	'The tracking timeframe for this Work Plan is the first 10 years of implementation.' I thought this was a much longer process and that tracking continues beyond 10 years.	Ten years is the first major milestone for reporting to the director, then it is every 5 years thereafter (see RCW 36.70A.720). Revise text to clarify.
43 *	D. Berkowitz	ALL	ALL	NA	Where do conservation groups fit in with monitoring?	CD will determine and incorporate into Work Plan as necessary. If conservation groups are working with private landowners and get permission to report, then they can be used in reporting. Bird surveys and counts, and other data, can be used on a case-by-case basis. It depends on the purpose and the quality of the data and training and resources available to ensure consistency and quality. If a specific need arises and a conservation group may be suited to help, the CD would consider using their services.
44 *	M. Ritter	TOC	TOC	NA	Under "Prepared by:" section, change Mike Ritter to Michael Ritter	Revise text.
45 *	M. Ritter	3	28	NA	Priority Habitat and Species. 5% will change once additional shrub-steppe and mule deer range are added.	New data requested, will update when available.
46 *	M. Ritter	3	28	NA	HCA Functions. Fish habitat, especially for salmonids, is not a big issue in the county. Recommend that this read more toward shrub-steppe: "native shrub-steppe supports sensitive species and provides refuge, nesting and rearing areas for wildlife and plants."	Agree with suggested revision, will revise text.
47 *	M. Ritter	3	28	NA	PHS on Ag Lands. Ferruginous hawk habitat will not be most prevalent once mule deer range is included.	New data requested, will update when available.
48 *	M. Ritter	3	29	NA	Figure 3-3. The shrub-steppe layer is not complete and mule deer range is basically the entire eastern edge of county along Snake River starting east of Juniper Dunes and all the way up.	New data requested, will update when available.
49 *	M. Ritter	3	29	NA	Game species in PHS maps. PHS shrub-steppe and especially mule deer habitat overlaps with a lot of dry land farming in the eastern portion of the county.	New data requested, will update when available.
50 *	M. Ritter	4	55	NA	Protection and enhancement. I generally agree with this since it will hopefully concentrate VSP efforts in areas where WDFW and others have previously identified connectivity corridors, habitat concentrations, etc. It gets us away from piecemeal actions, which are still good, but create isolated islands when what we really need to do is multiple long-term efforts in certain areas.	Comment noted.
51 *	M. Ritter	4	55	NA	Regulatory surprises is not necessary. Suggest: "providing regulatory assurances and support to implement voluntary practices."	Thanks for the suggestion, we will revise text as requested.
52 *	M. Ritter	4	55	NA	Objective (first row). Suggest: "Protect and enhance…techniques that limit adverse impacts to native plants and animals."	Revise text.
53 *	M. Ritter	4	55	NA	Objective (second row). Suggest: Protect and enhance…that promote water management to reduce irrigation water inputs/impacts to native fish and wildlife and their habitats.	Revise text.
54 *	M. Ritter	4	56	NA	Objective (first row). Suggest: Restore existing or degraded native habitat. Remove from list: Fish and wildlife structure and hedgerow planting.	Revise text.
55 *	General	NA	NA	NA	WDFW and other agencies or groups must continue monitoring efforts and improve methods to help in validating VSP performance.	Add in text caveats where necessary to emphasize this.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
56 *	Work Group	NA	NA	NA	As discussed in the April Work Group meeting, Franklin County Code critical areas buffers will be used for calculating direct effects to be consistent with the code.	This will be noted in the Work Plan and incorporated into the technical appendix as necessary.
57 *	Work Group	NA	NA	NA	As discussed in the April Work Group meeting, use the term "Conservation Practices" consistently; stewardship strategies and other terms are not as commonly used in Franklin County.	Revise text.
58 *	Work Group	NA	NA	NA	As discussed in the April Work Group meeting, the goals and measurable benchmarks methodology is being updated and will be revised in Section 5 to reflect these changes. For example, the CD has committed to monitoring a subset of practices using field verification measures.	This will be noted in the Work Plan and incorporated into the technical appendix as necessary.
59 *	Work Group	NA	NA	NA	As discussed in the April Work Group meeting, CPPE will be used to relate conservation practices benefits to critical areas functions and values.	This will be noted in the Work Plan and incorporated into the technical appendix as necessary.
60 *	Work Group	NA	NA	NA	At the April Work Group meeting, the group discussed which level of enhancement to propose in the Work Plan goals.	Anchor QEA will work with FCD to develop this goal. The decision will be brought to the Work Group for further discussion and approval.
61 *	Work Group	NA	NA	NA	As discussed in the April Work Group meeting, CRP is not considered a critical area. CRP is agricultural land, but all agricultural land provides some habitat function and CRP land provides additional enhancement. Therefore, CRP land will count as enhancement and will be adjustable as CRP land goes in and out of production.	Revise text.
62 *	Work Group	NA	NA	NA	As discussed in the April Work Group meeting, for producer participation goals FCD recommended using 10% of the number of producers today over the life of the plan. Another option implemented for other counties is more qualitative and includes a goal to increase the level of participation among agricultural producers in implementing stewardship practices.	Anchor QEA will work with FCD to develop this goal. The decision will be brought to the Work Group for further discussion and approval.
63 *	Work Group	1	3	NA	Put positive paragraph first "What are the advantages of participating in VSP?	This text was changed as requested.
64 *	Work Group	1	4	NA	Change protect "and/or" enhance consistently throughout the document.	This text was changed throughout the document as requested.
65 *	Work Group	1	5	NA	Figure 1-1: Maintain or enhance ag viability	Enhance was added to Figure 1-1
66 *	Work Group	2	17	NA	Esquatzel was historically a topographic low that would have flowed during high precipitation events and portions were converted for the purposes of CBP. See SMP language and verify enough detail about historical conditions.	This text was changed as requested.
67 *	Work Group	5	68	NA	Water quality: be cognizant of use as a trend versus indicator.	The text in this section was updated.
68 *	Work Group	NA	NA	NA	Checklist: This is an opportunity for ag producers to show we are stewards of the land. Replace "failure" textbox	This textbox will be deleted.
69 *	Work Group	NA	NA	NA	Checklist: Replace balance scale with updated version	This figure will be replaced.
70 *	Work Group	NA	NA	NA	Checklist: Incorporate sustainability	Anchor QEA will work with the CD to determine how to incorporate sustainability into the checklist.
71 *	Work Group	NA	NA	NA	Checklist: Modify sprinkler irrigation to sprinkler efficiency and changes to water management can have effects to associated wetlands	Anchor QEA will work with the CD to determine how to update this text as requested.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
72 *	Tech Panel (on other Work Plan)	1	NA	NA	The list of work plan participants looks representative of the area, but I didn't see a description of the process that was used to select the Work Group (WSCC); It does not appear in the work plan that there was much outreach for input. Perhaps this just needs to be clarified as to what outreach was done on the plan (ECY)	Add language such as: "The Work Plan was developed through a series of 11 Work Group meetings, beginning on August 25, 2016 through November 2, 2017. Work Group members were recruited through mailed invitation to tribal affiliates, conservation agencies, and past and current participants in County conservation practices. Additionally, the FCD conducted the following outreach activities to form the Work Group: hosted an "Informational VSP kick-off" meeting on August 25, 2016; ran ads in local papers; and posted Work Group invitation announcements on the FCD website. Throughout the Work Plan development process, meeting agenda and materials were available to the public via the FCD VSP webpage (http://www.franklincountyvsp.com/index.php) and also emailed to the VSP interested parties/contact list for all Work Group meetings. FCD also ran a public review period of the draft Work Plan from September 26, 2017 to October 27, 2017 to obtain public input on the plan".
73 *	Tech Panel (on other Work Plan)	5.2	NA	NA	The Work Plan does not include a distinct baseline for stewardship activities or participation as of July 22, 2011. The TP members discussed whether the Work Plan approach meets the requirement for RCW 36.70A.720(1) (i) for "establishing baseline monitoring". Due to the lack of available data to establish County-wide stewardship participation as of 2011, the Work Plan identifies average historic participation rates and establishes a baseline monitoring approach to overcome estimated discontinuation of practices.	Suggest adding text box with following language: "**Establishing Baseline Monitoring per RCW 36.70A.720 (1)(i)** This section describes measurable benchmarks for participation in conservation practices. Conservation practices have been implemented since 2011 to improve agricultural productivity, reduce erosion, and improve soil quality from July 22, 2011 baseline.
74 *	Tech Panel (on other Work Plan)	5.2.2	NA	NA	TABLE 5-7: Consider clarifying how acres in Table 5-7 (Protection and Enhancement Benchmarks) were calculated for 2021 and 2026 performance objectives, and update headings to make clearer what is included in table.	Suggest adding text: "**Current performance based on 2011 to 2016 participation data:** As indicated in Table 5-7 (last column), total participation acres in key conservation practices since 2011 have overcome the anticipated reduction in acres (or other measure). Protection and/or enhancement performance objectives for 2021 and 2026 (participation acres) have been met based on reported acres in conservation practices from 2011 to 2016. Additionally, the acres that have been reported in conservation practices from 2011 to 2016 have overcome the estimated acres for discontinued practices through 2026. The Work Plan will rely on adaptive management procedures (Section 5.4) to help assess whether protection and/or enhancement of critical area functions are occurring, which will be reported as described in Section 6.3."

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
75 *	Tech Panel (on other Work Plan)	5.3 and 5.4	NA	NA	Re: RCW 36.70A.720(1)(E)(i) – *Create measurable benchmarks that, within ten years after receipt of funding, are designed to result in the protection of critical area function and values* The current level of participation is the baseline though a number is never given. A key assumption is that participation describes ecological outcomes. I have two concerns: 1. There is high uncertainty that participation = ecological outcomes. 2. This approach does not speak to the entirety of critical areas in Grant Co, only those enrolled in a program/ or passively doing conservation (WDFW). Central premise is that measuring participation and implementation of specific BMPs will protect CA functions and values by linking CPPE values to CA functions. The problem is that these only address protections of functions and values for participating producers, which is acknowledged at 10%, county-wide. It does not address CA functions and values on a watershed scale (or community scale as they've chosen to divide the county) or for non-participating producers (WSCC).	Suggest adding a note after the "Habitat Indicators" as follows: Random sample areas will include a representation of lands for VSP participants as well as other lands that may or may not have practices implemented on them, and these results will be extrapolated to the larger watershed analysis unit areas and the County, in an effort to more accurately characterize critical areas protections achieved. Revise Table 5-10 WDFW PHS row as follows: Tracking priority habitats and species data through the WDFW; tracking changes in habitat quality and extent; Evaluating random samples of critical areas (including a representation of lands with conservation practices documented and lands where practices are not documented) using aerial imagery and associated GIS methods
76 *	Tech Panel (on other Work Plan)	5.3	NA	NA	Yakima County's Work Plan included "Guiding Principles" for the use of aerial imagery as a monitoring tool, which the Work Group may want to consider including. See additional new language for consideration.	Add "Guiding Principles for Aerial Imagery Interpretation" High resolution change detection or other public available aerial imagery is described as a potential monitoring tool for habitat indicators. This Work Plan includes the following Guiding Principles to ensure imagery interpretation would be reported at a watershed scale, recognize the voluntary nature of the VSP program, and the privacy concerns of volunteers and landowners: • Monitoring activities that involve imagery should focus on publicly-available imagery. • Monitoring should be reported at the watershed scale, not the parcel scale. • Imagery evaluation should include a random sampling of areas within the Work Plan's watershed analysis units., It's important to note that changes to baseline conditions outside of VSP are likely to occur due to effects from climate change, natural events (e.g., wild fires), changes in aquifers, and associated surface hydrology from future water supply improvements, or other changes outside of the scope of VSP. Regarding agricultural viability, national and international trends in the market for agricultural products are beyond the control of the Work Plan.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
77 *	Tech Panel (on other Work Plan)	5.4	63	NA	TEXT BOX: The Work Group may want to consider additional language developed for the Yakima Work Plan describing areas outside of the scope of the VSP Work Plan. See additional new language for consideration.	Revise text as follows: **Changes to Baseline Conditions – Areas Outside of VSP Scope** It's important to note changes to baseline conditions outside of the scope of VSP are likely to occur due to effects from climate change, natural events (e.g., floods, wild fires), the Columbia Basin Project, or other changes outside of the scope of VSP (e.g., land conversions). Additional changes to baseline may occur in the County that are the result of activities outside of the County, such as effects to watercourses that occur upstream and outside of the County limits, GMA-regulated conversions, changes in eligibility for federal program, changes in federal program funding contract conditions, technical mapping corrections, mapping errors, changes beyond a producer's control, etc.). These changes will not be counted against agriculture for VSP assessment purposes and will be documented through the reporting and adaptive management process.
78 *	D. Berkowitz	NA	NA	NA	GENERAL: My major concern is the emphasis on participation and CPPEs rather than on evaluating critical area functions and values, what I think are being called 'indicators' in the document. VSP has to meet benchmarks – and the functions and values should be an integral part of the benchmarks, not separated out as 'indicators.' While benchmark and performance objectives should include information on participation and while number of acres protected/enhanced is also important, the goals and benchmarks should be evaluated based on whether a critical area and its function/value is actually protected or enhanced. The way to do this is by observation, based on imagery or on-the-ground truthing. I don't see how using CPPEs accomplishes this; it looks only at those areas that are enrolled in a conservation practice, but not at those other agricultural areas that intersect with critical areas but aren't enrolled in a conservation practice. How are these other areas being protected and prioritized?	The Work Group has determined over the course of many meetings that this is where the Work Plan emphasis should be. This approach maximizes the amount of resources that goes into FCD projects, with an appropriate amount of monitoring a random sample of practices and critical areas using ground-truthing, GIS, and imagery verification (i.e., photographs) at years 5 and 10. Ongoing monitoring will also occur on a project-by-project basis, with results incorporated into VSP monitoring as applicable. This will be in addition to the random sampling selected as part of the 5- and 10-year monitoring efforts. As previously discussed, this is a more cost-effective approach that meets the objectives of VSP.
79 *	D. Berkowitz	NA	NA	NA	GENERAL: Functions and values (and not just participation) should be part of the 2-yr reports and shouldn't wait for the 5-yr reports. If there are problems developing, we should know about them prior to when we have to implement adaptive management.	See response to Comment 78. The 5- and 10-year monitoring will include projects next to critical areas and critical areas without projects and do a comparison to verify whether there has been a change in functions and values. In addition, the ongoing monitoring conducted on a project-by-project basis will include similar ground-truthing and imagery verification (i.e., photographs) to be included in the VSP reporting. The FCD is confident that this will provide the needed coverage in advance of the 5-year reporting timeframe.
80 *	D. Berkowitz	NA	NA	NA	GENERAL: Protection Performance Objectives should be looked at as a loss of function compared to what existed in 2011, not as a few additional acres managed. (Table 5-7). It's not just "no net loss of acres managed under conservation practices," but "no net loss of critical functions or critical habitats."	Comment noted. Note that Table 5-7 is only one method of determining whether or not performance objectives are met. Other methods include determining function and values protection or enhancement through conservation practice type and monitoring of a subset of practices by the FCD to ground-truth the data. Overall performance is looked at on a county-wide basis, not by property. In summary, we want to make sure in aggregate the county is protecting and enhancing critical areas.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
81 *	D. Berkowitz	NA	NA	NA	GENERAL: The document needs more emphasis on habitat and on habitat connectivity. Shrub steppe habitat is barely mentioned. There's so little of it left, that what's there should be a high priority to maintain.	We will emphasize habitat and habitat connectivity throughout the document, with a focus on shrub-steppe, where applicable. Note that previous comments for shrub-steppe habitat were addressed (Comments 26, 45, 46, 48, and 49). See Page 20, Line 513 for a detailed description of shrub-steppe habitat in Franklin County.
82 *	D. Berkowitz	NA	vii.	NA	Change Valerie Carlson to Debbie Berkowitz; LCBAS alternate is Kathy Criddle; Isn't Mark Nielson Franklin Conservation District?; Shouldn't Heather Wendt be on this list?	We will update Valerie and the LCBAS alternate. The other information is correct and will remain as-is.
83 *	D. Berkowitz	1	5	267-268	Baseline conditions shouldn't be so readily changeable. For example, market conditions shouldn't have an impact on baseline conditions. Instead, include a statement like – 'Factors that are outside the control of the agricultural community would generally be excluded for VSP monitoring and adaptive management.' It should also be noted that while some factors may be outside the control of the agricultural community, how producers respond to an event may affect a critical area positively or negatively (e.g., grazing after a fire).	The sentence also states: "or otherwise accounted for in tracking program performance." The suggested text will also be added for clarity.
84 *	D. Berkowitz	1	5	269	Lack of funding could impact enhancement goals, but shouldn't impact protection goals.	Comment noted.
85 *	D. Berkowitz	1	6	300	Establish protection and enhancement goals and measurable benchmarks that protect the functions and values of critical areas.	Comment noted.
86 *	D. Berkowitz	1	6	307	Should also include a bullet to provide an adaptive management plan.	Will include additional bullet as suggested.
87 *	D. Berkowitz	2	14	NA	TABLE: Aren't GHAs also associated with landslides in western part of the county? (part is on ag land or is affected by ag watering)	Comment noted. The Plan has adequately covered the variety of GHA hazards in the county, including landslides. This is covered in the table, the text, and the mapping included in the Work Plan.
88 *	D. Berkowitz	2	17	NA	Esquatzel Coulee probably provides one of the most important wetland and habitat areas in the County and from the maps, appears to provide the major north-south connectivity. I understand that most of it doesn't intersect with agricultural land, but hope that SCBID will protect the functions and values of this significant critical habitat area.	Comment noted.
89 *	D. Berkowitz	3	24	601	Language for consideration: When irrigation efficiencies result in wetlands drying up, voluntary enhancement measures could be implemented to help maintain habitat features, although these voluntary enhancements would not be necessary to meet the wetland protection standard.	Will add clarification as suggested.
90 *	D. Berkowitz	3	27	620	Non-native Russian olives provide important habitat.	Will add clarification as suggested.
91 *	D. Berkowitz	4	40	814	How does crop rotation protect wetland/floodplain/CARA/GHA/FW HCA? I understand how it protects agriculture and protects soil, but how is this a critical area protection?	See language in text box regarding protection of agricultural viability and improvements to soil health and protect against erosion.
92 *	D. Berkowitz	4	44	NA	FIGURE 4-2: How many of these impact actual critical areas? I.e., where is the intersect of these activities with critical areas? Benton County VSP was very careful to point out that the goals and benchmarks applied 'in areas of critical area intersect with agricultural activities,' not on all agricultural lands.	All of them are conservation practices that do or have the potential to affect critical areas. This table is not intended to describe the critical areas intersection. Section 5 includes this information. We will add clarifying language.
93 *	D. Berkowitz	4	47	910	If 'most lands [enrolled in CRP] are not designated as critical areas', then I don't understand the connection between CRP and critical areas. Does this mean that most CRP lands don't provide habitat benefits and only those that do should be included as a critical area? If land was in CRP in 2011 and had habitat benefits, then those should count towards the baseline for protection. Since CRP isn't permanent, maybe it shouldn't count for habitat enhancement.	If the land was in CRP in 2011, it was providing enhancement benefits. Those benefits will continue as long as it is in CRP, or if it is disenrolled and still maintains associated benefits from native vegetation or other habitat improvements.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
94 *	D. Berkowitz	4	47	925	Part of acreage removed from dryland farming is shown as going to irrigated farming. How does this increase potential water efficiency overall?	That statement was intended to highlight that water efficiency may have been realized through better management of existing water resources.
95 *	D. Berkowitz	5	53	NA	Shrub steppe habitat and connectivity of habitat aren't explicitly mentioned in this table. Protecting the limited number of acres that are currently managed doesn't look at protecting the rest of the currently existing critical F&W HCAs. There should be priorities for protection of shrub steppe habitat based on areas with at least moderately good functional value and on connectivity and pinch points.	Will incorporate this suggestion into the table where applicable.
96 *	D. Berkowitz	5	54	1008	Participation goals do not ensure protection of county's critical areas and associated functions and values. A statement is needed that says something like: 'While participation benchmarks are included, the goals and benchmarks are evaluated based on whether a critical area function is protected or enhanced. These functions are determined using imagery interpretation and site visits by technical assistance providers with participating landowners.'	Will incorporate the suggested text.
97 *	D. Berkowitz	5	54	1015	Enhancement goals may not have to be met for VSP to continue, but additional voluntary actions would need to be identified.	We have a variety of potential practices that can both protect and enhance critical areas identified in throughout Work Plan. Enhancement measures continue to the goals. If somebody wants to protect a critical area with a fence or change land to CRP, these are all enhancement and work toward meeting enhancement goals in the Work Plan.
98 *	D. Berkowitz	5	54	1017	Benchmark reports should be every 2 yrs. to make sure we're heading in the right direction. Every 5 yrs. would be a test of the work plan and would determine if adaptive management is needed.	We will update the plan to clarify that progress will be reported on a 2-year and performance measurement reported on a 5-year basis.
99 *	D. Berkowitz	5	55	1029	CPPE is based on participation in practices and an averaged CPPE function effects score, but not on the effectiveness of a practice as actually implemented. CPPE might be used (if at all) as a general idea of whether or not a conservation practice might be useful. But it shouldn't be used to track changes in functions affected by a given conservation practice nor should it be used as a substitute for monitoring what's happening on the ground. The graphs in Appendix C are misleading, making it appear that critical area protection is increasing by large amounts.	Comment noted. CPPE is used as a commonly accepted dataset to provide a function effect score and ground-truthing and monitoring will occur on an ongoing basis to confirm as described in the response to Comment 78.
100 *	D. Berkowitz	5	55	1046	The baseline condition is not just the (enrolled acres minus the disenrolled acres) x the CPPE score. This doesn't relate to the actual condition of the critical areas in 2011, just to the number of acres that were enrolled in a conservation practice. It doesn't explain what was happening with the acres of critical areas that intersect with agriculture but weren't enrolled in a conservation practice. Those areas are also subject to protection.	Comment noted. Our approach, as we have discussed in the past, is based upon available information in 2011 and FCD will be tracking the changes through conservation practices and monitoring practices as noted in Comment 78.
101 *	D. Berkowitz	5	56	1064	I don't understand how indirect effects work. If they're not adjacent to critical areas or buffers, how do you know what effect ag is having? This would be hard to measure.	Comment noted. The indirect effect that agriculture is having on critical areas and buffers is difficult to measure and will need to be accounted for during monitoring practices described in Comment 78.
102 *	D. Berkowitz	5	56	1067	Benchmarks shouldn't be focused solely on participation. Benchmarks should also be addressing the areas and functions of the various types of critical areas.	Comment noted. See response to Comment 78 for clarification.
103 *	D. Berkowitz	5	60	1116	Indicators should be classified as benchmarks. Indicators per se are not requirements in a work plan, benchmarks are. Indicator (i.e., benchmark) data should be reviewed every 2 yrs to determine the effectiveness of the methods being used to protect/enhance CA functions and values.	Comment noted. Indicators will be reviewed every 2 years to determine the effectiveness of conservation practices used to protect/enhance critical areas and functions and values. See response to Comment 78 for clarification on monitoring activities.
104 *	D. Berkowitz	5	60	1127	Add – 'unless the contribution of ag activities can be understood.'	Will add the suggested text.
105 *	D. Berkowitz	5	62	1206	Goal adjustments – does this mean participation goal objectives?	Participation goal objectives and other goals set as part of implementation.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
106 *	D. Berkowitz	5	66	NA	TABLE 5-9: I do not understand this table. According to Table 3-1, there are 63,951 acres of Fish & Wildlife Habitat Conservation Areas within agricultural lands in Franklin County. According to Table 5-9, the protection metric for habitat management participation is 2 acres and the adaptive management trigger is 3 acres. What's happening with the other 63, 948 acres of functioning F&W HCAs? We should be looking at a reduction (say 5%) in good habitat concentration areas as something that would trigger adaptive management. Similar questions come up for the other types of critical area, e.g., wetland areas.	This response specifically references the habitat question, but it is applicable to all of the conservation practice types in Table 5-9. The 63,951 acres of Fish and Wildlife Habitat Conservation Areas within agricultural lands (Table 3-1) does not tell us how much of this habitat was present for the baseline condition start date of 2011, nor is the amount regularly tracked (i.e. annually, biannually) or tracked in a standard way by regulatory agencies. The VSP is intended to track changes as they are caused by agriculture, and looking at the change in this overall number would require examining if any land use conversions (e.g. from agriculture to residential/commercial/industrial development) were occurring. This approach looks at the amount of conservation practice participation, and assumes a percentage disenrollment rate from these practices (in the case of habitat management, we assumed an annual disenrollment of 7%). Looking at the enrollment in acreage-based habitat conservation practices from 2011, we found that 33 acres of habitat practices per year were enrolled. Applying the 7% disenrollment rate, we had a little over 2 acres per year that were likely disenrolled. The protection metric thus requires at least 2 acres of enrollment per year to cover this disenrollment rate and maintain the baseline amount. If we increased the disenrollment rate to for example 20%, we would need to enroll at least 6.5 acres per year to cover the amount lost. The adaptive management metric at 3 acres (120%) of the protection metric is set to trigger action, as this amount is above our estimated disenrollment rate of 7% and if continued could mean that we fall below the 2011 baseline habitat amounts. Importantly, this approach allows us to easily track the conservation practice enrollment amounts annually through systems already in place and with a goal in mind (enrolment of at least 2 acres of habitat practices). If FCD staff through monitoring and discussions with producers find that the disenrollment rate for a practice is higher than our estimate, we can adjust this calculation and set a new protection, and adaptive management trigger rate.
107 *	D. Berkowitz	5	67	NA	TABLE 5-10: Aren't a number of these subject to regulatory requirements, so partly out of VSP control?	Correct. That is why they are being provided as indicator data rather than benchmarks.
108 *	D. Berkowitz	5	67	NA	TABLE 5-10: Every 2 yrs to monitor.	See response to Comment 78 and 98. Revised table to read every 2 and 5 years, or as data is available.
109 *	D. Berkowitz	6	72	1352-1375	The 2-yr status reports should also be looking at progress in meeting the 'indicators' described in Section 5 – which is why the indicators should be included in the benchmarks. Five-yr reports would be looking at whether we're meeting goals and benchmarks (including 'indicators').	See response to Comments 78 and 79. Also, revised text in the plan to indicate that indicator data described in Section 5.3 will also be reviewed to progress of Work Plan performance in meeting goals and benchmarks.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
110 *	D. Berkowitz	NA	NA	NA	APP A, FIGURE 4: How are the wetlands in the northwest/north central portion of the county being protected in this document? The document talks about hydrologic functions, but not about specific wetland areas. The wetland areas should be specifically called out as critical areas to be protected for their functions.	We will add a callout in the Work Plan identifying this specific wetland complex as an important area for consideration.
111 *	D. Berkowitz	NA	NA	NA	APP B-3, P. 3, CARA: within 100 ft of all irrigation district main canals. How do these relate to ag protection of critical areas since they're not controlled by ag?	These areas can be affected by indirect effects, which are described in Section 5.
112 *	D. Berkowitz	NA	NA	NA	APP C, P. 2: How is wind a consideration in VSP since it's not controlled by ag?; Same for drifted snow – how ag related?; Insufficient water use on non-irrigated land – how ag related?; Habitat – decline of shrub steppe habitat and shrub steppe species isn't mentioned.; Too much emphasis on CPPE – should be used just as a tool to decide what practices might be useful – i.e., as a participation tool, but not as a function and protection tool.; Disenrollment – not recorded, just guessed at. This is one of the reasons why participation isn't a good measurement. Need to have on-the-ground truthing or at least imaging.; P. 5 to 8 – These graphs are misleading. They don't give an indication of how much (for example) habitat area/function or wetland area/function is being protected. The graphs make one think that we've had a huge increase in protection/enhancement since 2011. This seems inconsistent with Table 5-7 and 5-9.	Comment noted. Wind and drifted snow impacts are included due to their role in affecting agricultural resources. Some of the impacts from these features can be minimized through implementation of conservation practices. Shrub-steppe habitat and habitat connectivity are addressed in the Work Plan. Table 1 is more general in nature. See response to Comment 78 and other previous responses for answers to some of these questions/comments relating to disenrollment, ground-truthing, functions and values, etc.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
113 *	D. Berkowitz	NA	NA	NA	GENERAL: I am still concerned that there is insufficient monitoring of the different critical areas and also there is no acreage benchmark or acreage threshold for adaptive management. Without this information, I don't see how we can tell if VSP is succeeding or failing at protecting critical areas. The monitoring needs to be done every 2 yrs to catch negative changes in critical areas in time to adjust before adaptive management is required.	To support the VSP every two-year reporting and five year performance review, monitoring of practices and review of indicators information will occur at least every 2 years, with information to support the review and reporting collected annually. The minimum time for adaptive management review as outlined in the work plan is 5 years ("would repeat cyclically at least every 5 years"), however, if a direct monitoring conservation practices indicator is triggered or an indirect monitoring indicators negative trend appears or is triggered prior to the five-year review date, then this will trigger the adaptive management reviews as described for conservation practices (in Table 5-9) and for critical areas indicators (in Table 5-10). We can update text in the work plan that clarifies this intention. You are correct in that a specific % has not been identified for the critical areas indicators thresholds. This is because for surface and groundwater quality, and wetlands and even riparian areas (as discussed in the meeting) there is year to year and seasonal fluctuations and so multiple years of data are needed to verify a trend is occurring, and we are not confident in putting a percentage of change value in at this time. That is something that will have to be determined during implementation, and we expect the CD will coordinate closely with the Workgroup on findings from data review during implementation. For shrub-steppe habitat a value could be established, and we recommend to the Workgroup establishing a 2.5% reduction threshold for shrub-steppe habitat in areas in the county outside of UGAs with a direct agriculture intersection to trigger adaptive management measures, based on your information provided from Yakima County.
114 *	D. Berkowitz	NA	NA	NA	It's also hard to tell how much overlap there is in what conservation practices are treating – e.g., pest management and nutrient management can be treating the same critical area, so should be counted as protection of one critical area.	There will be overlap with measures but this will be acknowledged in the reporting and will be counted as protection of one critical area by the applicable one or more practices, and specify the benefits to specific functions and values addressed by the practices, which can be different. CPPE is a useful tool for this application.
115 *	D. Berkowitz	NA	NA	NA	I'm also concerned that we don't have goals for participation relative to the total number of acres of each type of critical area in the intersect with agriculture	Establishing goals for participation relative to the total number of acres for each critical area type in intersection with agriculture would be a detailed and time-consuming process and beyond the scope and budget of what we were able to develop for the Franklin VSP work plan. Perhaps some informal goals could emerge as part of implementation, as information is collected on practices and as indirect indicators such as aerial imagery are evaluated and findings are developed over time. Suggest this be something that is further discussed with the Workgroup and evaluated later in implementation (after a few years of collecting and evaluating information), with feedback from the CD on what this would require for resources to complete.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
116 *	D. Berkowitz	NA	NA	NA	I spent some time reading parts of the Yakima County VSP work plan and talking about it and I would like to see many of these ideas incorporated into our document. Examples are provided in the following paragraphs. My understanding is that Yakima County will be doing aerial imaging and interpretation and looking at the data every 2 yrs. "The intent is to interpret imagery and maps in combination with other monitoring tools such as rapid watershed assessment or expert panels to provide as complete a picture of critical area functions and values as possible." Computer programs are set up to do imagery interpretation at very high resolutions. They will look at change data in detail but will report it at the watershed scale. E.g., they will look to track composition, cover, and connectivity in all 660,000 acres of shrub steppe intersect with agriculture in N. Yakima County. In other words, they're not doing random sampling. I'm sure there is some QC checking of the computer output to make sure it's making sense and it would make sense to check this especially in high priority areas. There are lots of good groups who do this kind of work including some at WSU. If remote sensing isn't adequate in some locations to determine if functions and values are doing well, Yakima County would convene an expert panel that may do partial sampling/ground truthing in the field. The National Agriculture Imagery Program (NAIP) has collected aerial data in WA every 2 yrs since 2011 at the 1 meter resolution, so it sounds like data are available. Yakima County collects aerial imagery approximately every 2 yrs.; does Franklin County do the same?	As described in the response to Comments #75 and #76, aerial imagery will be collected and reviewed every 2 years as part of the status reporting (see Section 6.3 of the Work Plan). The NAIP source noted in Yakima County's plan is the same source that is proposed for Franklin County, and what was used to establish the 2011 baseline. This is a national database collected through the NAIP program and is expected to be available every 2 years. We will update the Work Plan to explicitly identify NAIP data as an indicator data source for Fish and Wildlife habitat and include in Table 5-10.
117 *	D. Berkowitz	NA	NA	NA	The Yakima County work plan provides a numerical value for various critical areas that would trigger adaptive management. For example, if a reduction of shrub steppe habitat exceeds the management threshold of 2.5% at the watershed scale, then adaptive management is necessary. Even if loss is due to fire from a non-agricultural activity and doesn't count against the benchmark, the technical providers still work with affected producers to address options for rangeland operations and shrub-steppe recovery.	We recommend adding a footnote to table 5-10 for Fish and Wildlife Habitat Conservation Areas that a 2.5% reduction threshold for shrub-steppe habitat in the County defines a "significant trend." As described in the response to Comment #81, we will emphasize habitat and habitat connectivity throughout the document, with a focus on shrub-steppe, where applicable.
118 *	D. Berkowitz	NA	NA	NA	Yakima will survey all producers and will directly contact 20% of the producers annually that have at least a certain number of acres in the intersect with critical areas. Their goal is to achieve contact with producers in at least 80% of the intersect acreage.	Section 6.2 of the Work Plan describes outreach procedures. In addition to the outreach efforts that have already occurred, during implementation, the CD will contact individual landowners and private industry groups in Years 0-2 to identify conservation practices occurring outside of government programs. Outreach will also continue throughout the duration of implementation. Increased outreach will occur as part of the implementation process if indicators show that agricultural practices are negatively impacting critical areas as described in Section 5.4 and Table 5-10 of the Work Plan. The CD can share with the Workgroup any informal goals they might develop on outreach to landowners as part of implementation, but we do not recommend formal goals be established at this time.
119 *	D. Berkowitz	NA	NA	NA	Yakima County has also proposed a budget for implementation and monitoring of which 10% goes towards monitoring. I think that's a reasonable number. That leaves 90% for staff resources and cost shares to work with willing landowners. The 10% monitoring would pay for mapping and surveying every 2 yrs as well as reporting and expert panels. Yakima considers aerial imaging and interpretation to be a relatively quick and inexpensive monitoring tool. As I have been saying at our monthly meetings, I want to see our work plan incorporate this kind of information for our critical areas so we can effectively determine if our VSP program is succeeding.	See responses above regarding monitoring and the use of aerial imagery during implementation. We also agree it is a relatively quick and inexpensive tool, but also note that we also have included some ground-truthing as part of this monitoring, which can be more time consuming. Our opinion is that the budget identified for monitoring in the work plan is adequate. As described in the response to Comment #78, this approach maximizes the amount of resources that goes into FCD projects and provides a cost-effective approach that meets the objectives of VSP.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
120	D. Berkowitz	NA	NA	NA	While participation and participation benchmarks are important to the success of the VSP Work Plan, participation goals should not be based on historical enrollment data (Table 5-7, Protection benchmark is 'no net loss of acres managed under conservation practices'). For example, out of the ~63,000 acres of habitat, 196 acres was the average annual participation in key practices between 2011 and 2016. Enrollment declines below this number would trigger adaptive management, and the adaptive management trigger would occur if 3 acres were unenrolled (Table 5-9). Participation goals should be based on having the enrollment needed to protect and enhance critical areas, e.g., 80% of the acreage in each of the critical area types. To accomplish this, annual outreach goals should be included that reach out to a (Work Group-) defined number or percent of producers with property in the intersect with each critical area. Goals can be adjusted as we become more familiar with the VSP process, but having goals is important to know what is (or isn't) working. Knowing the producers whose property may intersect with critical areas would be essential to determining which producers should be contacted for the VSP program. Priority should be given to producers who have larger or priority critical areas on their properties.	See response to comment 106 for clarification.
121	D. Berkowitz	NA	NA	NA	The term 'indicator' should be changed to 'protection benchmark' or 'enhancement benchmark'. This is because the term 'benchmark' is used throughout the Franklin County Work Plan (and in the RCW) as the basis for determining whether the Work Plan succeeds or fails. In the Work Plan, the terms 'benchmark' and 'indicator' sometimes appear to be used interchangeably, but in other sections, 'benchmark' is the default term. In the Work Plan, the term, 'indicator' is used instead of 'benchmark' to look at environmental conditions and 'protection or enhancement benchmark' is reserved for participation benchmarks. The terms 'protection benchmark' and 'enhancement benchmark' should be reserved for the specific environmental conditions desired. Participation benchmark would be a separate benchmark category. This might appear picky, but words and how they're used (and how they match the RCW) are important. For example, if protection and enhancement benchmarks were used for specific environmental conditions desired, there would be a table for protection and enhancement benchmarks and objectives analogous to the one for participation benchmarks (table 5-7).	Indicators and benchmarks are different as described in the Work Plan Sections 5.2 and 5.3. See responses to comments 40, 41, 78, 103, 109, and 113 for clarification.
122	D. Berkowitz	NA	NA	NA	Protection and enhancement goals need to be more specific and more quantitative. We now have an adaptive management threshold of 2.5% for shrub steppe habitat, but we need similar types of thresholds for other critical areas. For example, Yakima County VSP has the 2.5% threshold for shrub steppe habitat, but also has a 10% threshold for a decrease in riparian area; a 5% reduction of wetlands conserved; a 10% reduction in areas of connected floodplain; and a 10% reduction in vegetation on erodible slopes. (Yakima County has similar issues about irrigation efficiencies that they and we would have to consider.) We should have data from the biennial NAIP database to determine trends between 2011 and 2017 that would be helpful in setting goals. These adaptive management thresholds (or similar numbers determined by the Work Group) would be initial goals that could be modified as we learn more about how the VSP process works.	See response to comments 116 and 117 for clarification.
123	D. Berkowitz	NA	NA	NA	Aerial imagery interpretation is computerized, so there should be no need to take a random sample of areas for interpretation (Table 5-10 and P. 63); more inclusive monitoring should be a reasonable approach. Perhaps a random sampling – or even better, a sampling in priority areas - could be checked by hand as a form of QA or if there are questionable data. Ground truthing, expert panels, or other more intensive forms of monitoring should emphasize priority areas.	This methodology will be refined during implementation as previously discussed and described in the Work Plan.

Comment No.	Commenter	Section No.	Page No.	Line Item	Comment	Proposed Response
124	D. Berkowitz	NA	NA	NA	While it is the function of a critical area that is important, it is very difficult from this document and the proposed goals and performance metrics to tell just how much of each type of critical area is being protected. At a minimum there should be some kind of mapping between the function that's being protected (e.g., water quality) and the critical area that's being physically protected.	See response to comment 115 for clarification.
125	D. Berkowitz	NA	NA	NA	Indirect effects of practices on critical area functions and values can be positive or negative. The plan should address how both positive and negative indirect effects will be taken into account and describe how they will be measured. It should also discuss how indirect effects will be mapped to specific critical areas.	Agreed. This is described in Section 5.3 and Appendix B-2 of the Work Plan. See response to comment 113 for clarification.
126	D. Berkowitz	NA	NA	NA	There are a number of instances in the document where 'protect and enhance' has been changed to 'protect and/or enhance. As one example, Table 5-1 talks about wetland protection and/or enhancement goals. We need both protection and enhancement goals (i.e., they should be distinct).	"Protect and/or enhance" has been added to the document as requested by the Work Group and specifically to areas pertaining to benchmarks to be consistent with the RCW.
127	D. Berkowitz	NA	NA	NA	We need to have discussions about prioritizing areas for protection. For example, l. 482 to 483 discusses a wetland mosaic in the northwest corner of the County that 'should be considered for future protection.' I think we should discuss this area as a high priority for wetlands protection. There are other areas that would be priorities for shrub steppe habitat protection as well as for wetlands and floodplain protection because of connectivity.	The text in the Work Plan has been revised to prioritize areas such as the northwest wetland complex and shrub-steppe habitat as requested.
128	D. Berkowitz	NA	NA	NA	P. 54 box on 'Establishing Baseline Monitoring per RCW 36.70A.720(1)(i).' This section states: "Establish baseline monitoring for (i) Participation activities and implementation of the VSP plans and projects; (ii) stewardship activities; and (iii) the effects on critical areas and agriculture relevant to the protection and enhancement benchmarks developed for the watershed." That is, this section is not just talking about participation but also protection and enhancement – and that should be included in our document.	Protection and enhancement of critical areas and critical area functions and values will be monitored and reported during implementation using the goals and benchmarks described in Section 5. In this Work Plan monitoring of enrollment and sample verification of conservation practices and correlation with CPPE will determine if protection and enhancement benchmarks are being met. Additionally, indicators will be monitored to indirectly determine the effect conservation practices have on critical areas functions.
129	D. Berkowitz	NA	NA	NA	Adaptive management actions seem a bit understated. We need to be actively seeking out willing producers to implement conservation practices.	See response to comment 118 for clarification.
130	D. Berkowitz	NA	NA	NA	Do we have a proposed budget for the next 2 yrs (or 10 yrs)? This is critical for setting and evaluating goals and measuring progress.	See response to comment 119 for clarification.

Technical Panel member	Element [A] (check all that apply)	Element [A] Explanation	Element [B] (check all that apply)
Commission	Needs clarification	Unclear what plans were reviewed, and of those, which had recommendations (for BMPs, critical area elements, or monitoring) were incorporated and how. Incorporation is mentioned on page 50, lines 982-984. 303(d) listings on page 63, lines 1186-1187 are mentioned. Habitat indicators data to be used include NAIP, WSDA, and WDFW's data on lines 1212-1213 on page 64 but are not identified elsewhere in the plan. Table 3-10 on page 38 mentions the "CWA, CAA, ESA and others" as part of agricultural viability analysis, but no further explanation is provided. Section 6.4 on page 77 covering existing programs. However, a bare statement of "These resources have been incorporated into this Work Plan to the maximum extent practical, consistent with the intent of the VSP" is all that explains how they are incorporated. See page 77, lines 1455-1456. GWMA noted on page 17, lines 459-463; no incorporation or indication of why the GWMA is important to VSP. VSP Submittal checklist (incorrectly listed as Attachment 1: Farm Stewardship Plan Checklist) says data and plans relevant to WP G&O in Tables 5-1 through 5-5, but I didn't see any data or plans referenced in those tables. Incorporation needs to be specific. How does Table 6-3 on page 78 add any sort of explanation of how existing plans or regulations are of assistance to the work plan? Appendix D lists plans in Table 3, many of which have recommendations for restoration but plans aren't referenced in VSP plan activities (BMPs or monitoring). To "incorporate", what are those actions? And where are they identified in the document?	Needs clarification
Agriculture	Deficient	There is a nicely detailed list and description of programs and plans, but I was unable to identify which were actually incorporated and where. This should be better detailed in 6.4 (maybe in Table 6-3).	Deficient
Ecology	Meets, but needs more information in the plan	How did the plans contribute to the work plan. What ag related goals or objectives support the VSP program? How can VSP activities support plan goals. Did the plans help prioritize outreach?	Meets, but needs more information in the plan
Fish & Wildlife	Meets, but could have more information in the plan	Describe in better detail what information was pulled into work plan.	Meets, but needs more information in the plan
WORK GROUP COMMENTS		- Section 2.4.1, Lines 459-463: Added clarifying language regarding GWMA and the VSP overlap. New text states: "The GWMA is composed of multi-county (Adams, Franklin, Grant) organization working together to implement groundwater management strategies outlined in the GWMA Plan (GWMA 2001). The GWMA Plan (2001) includes goals, objectives, and measures of success for groundwater resource protection, similar to VSP." The new last sentence states "The conservation practices included in this Work Plan are consistent with the management strategies outlined in the GWMA Plan as described in Section 5." - Section 5, Tables 5-1 through 5-5: Added new row to each table to include plans and programs incorporated for each critical area and related conservation practices. - Sections 5.2.1: This section describes the benchmarks methodology and how FSA, NRCS, WSCC, and FCD programs were incorporated. Similarly, Section 5.2.2, Table 5-7, further shows how these programs were incorporated into the benchmarks. - Section 6.4.1, Lines 1453-1461: This text describes how existing programs are incorporated into the Work Plan. - Appendix D, Table 3: This is where the Work Group decided include an expanded list of planning documents that were used to inform the Work Plan. These documents are also referenced throughout the Work Plan.	
Tech Panel Comments at and after February 9, 2018 meeting	OK	WSCC, WSDA, ECY, WDFW - ok to move on as the changes made were adequate to address the comments previously made.	OK

Technical Panel member	Element [B] Explanation
Commission	Page 6, lines 291-295 describes how input was sought, but doesn't really address whether or not the right people were there. Work group listed on page vi of the work plan - but no sense of if these are just the current members or how long they have served. How do these folks relate to the types of ag or other stakeholders in Franklin County?
Agriculture	There is a quick note on page 7 that FCD established the workgroup after receiving the contract from the county. However, we need detailed information about how that was done and why these were the right people to participate. This is especially true of tribal contacts - who, when, how often, etc.
Ecology	Add more information on why the work group members were the right people. Add more information on how the workgroup members were selected and what outreach was done.
Fish & Wildlife	Needs more detail. Why are those the right people to have on the work group? Were there folks that were wanted but did not participate?
WORK GROUP COMMENTS	- Section 1.2: Added text after line 295: "Work Group members were selected to provide a thorough representation of agricultural sectors, including: dairy, dryland, irrigated row-crop, cattle, tree fruit and irrigation districts. In addition, agricultural interest groups participated including the Washington State Potato Commission and the Washington State Farm Bureau. FCD also encouraged environmental interest group participation. However, due to the limited number of environmental groups in Franklin County FCD also allowed Washington Department of Fish and Wildlife to participate as a voting member. The current members have served throughout the VSP Work Plan process." - Note that tribes were among the groups that were contacted but chose not to participate in the Work Group.
Tech Panel Comments at and after February 9, 2018 meeting	WSCC, WSDA, ECY, WDFW - ok to move on as the changes made were adequate to address the comments previously made.

Technical Panel member	Element [C] (check all that apply)	Element [C] Explanation
Commission	Needs clarification	1) Table 5-7 (page 62) unclear. Cannot determine what the benchmark is relative to baseline (which is not shown). First column with average of 2011-2016 is an average. 2011 is the benchmark year, so why is the average being reported? 2) VSP Submittal Checklist references Table 5-8, but no benchmarks found. Rather, a statement that "sufficient ... participation ... that achieves protection ...) is in the benchmark column making for a somewhat circular benchmark (definitely vague) argument. Section 3.2 on pages 23-24 talks about establishing the baseline and the intersection between CA's and "agricultural lands" - implying that VSP applies to agriculture lands instead of agricultural activities (wherever those are as they intersect with the CA's). This section further implies that the intersect between these is minimal (see Table 3-1 on page 24) due to the use of the wrong term - agricultural lands versus agricultural activities.
Agriculture	Needs clarification	Include more information about the existing universe to provide context for the 10% landowner outreach goal (or about the process that will be used to assess that universe).
Ecology	Meets, but needs more information in the plan	Note that disenrollment rate will be adjusted up or down based on actual data. see p. 57 setting anticipated disenrollment rate. On Table 5-8 you should have some target numbers for outreach, Outreach to producers is a key element for VSP participation and you should have some targets for outreach. How will outreach be prioritized or targeted if protection goals are not being met?
Fish & Wildlife	Meets, but could have more information in the plan	Include outreach numbers. Why are those appropriate?
WORK GROUP COMMENTS		- RCW 36.70A.720(1)(c) relates to goals for participation. These goals are described in Table 5-7. The participation goal in Table 5-8 is to promote producer participation in voluntary stewardship of agricultural lands and critical areas to meet the protection and/or enhancement benchmarks and performance objectives and protect critical areas functions and values at a County-wide watershed level. Table 5-9 provides more specificity on the amount of participation at which adaptive management triggers if the county falls below that number. - The 2011 baseline is correlated with all conservation practices that have been disenrolled since 2011. Therefore, if conservation practices are equal or more than the baseline they provide equal or more benefit to critical areas and the protection benchmark is being met. Thus, tracking and monitoring disenrolled practices and newly implemented practices is equal to tracking 2011 baseline conditions. The average number is used as a basis for disenrollment, but only provided for illustrative purposes as we will determine what actual values are during implementation. - Table 3-1: Revised title to: "Intersect Between Critical Areas and Agricultural Activities Within Franklin County" - There is not currently a 10% outreach goal identified in the Work Plan. The implementation phase includes a 10% random sample verification by FCD to monitor reported conservation practices to verify performance as described in Section 5.4. - Section 5.2.1, Row 1080: Added note: "The disenrollment rate may be adjusted based on data collected during implementation." Added similar note under Table 5-4. - As described in the Work Plan, Section 5.4, outreach will be tied to enrollment or protection goals and will be refined during implementation and adaptive management. Therefore, target numbers for outreach are not specified. See "Adaptive Management Action" column in Table 5-8 to see how outreach will be prioritized if goals are not being met. Also, see the new Outreach Plan in Appendix E for additional outreach information.
Tech Panel Comments at and after February 9, 2018 meeting	OK with changes / edits to be made	Changes OK with the addition of the following information in the work plan: There are roughly 1,100 land owners in Franklin County whose land intersect with critical areas. FCD will commit to reaching out to 10% of the producers that operate those lands each year using the methods described in the Outreach Plan in Appendix E. As part of the adaptive management program, this percentage may change based on available funding and resources and/or how the county is tracking toward the goals and benchmarks described in the Work Plan during implementation.

Technical Panel member	Element [D] (check all that apply)	Element [D] Explanation
Commission	Needs clarification	Nothing found that is specific as to quantity or commitment. List of possibilities found at section 6.2.1, line 1387. An "implementation team" is mentioned on page 58, lines 1085-1086 - what is that? "Organization Leads" on page 74, section 6.2.1 lists "FCD.... supported by other agencies." Also, on page 75, Table 6-1 lists "potential" outreach strategies. Need specifics about which activities will be done, by whom, and when? and how was that effort determined based on number of operators the WG thinks they need to reach to accomplish goals.
Agriculture	Meets, but needs more information in the plan	Need better description of the universe of participants and how. Include the process that has already begun.
Ecology	Deficient	Add information on how outreach will be targeted, add targets for outreach activities - X number of meetings, contacts with producers etc. Clarify that outreach will continue past 2026 to ensure that enrollment is maintained and CAs are protected.
Fish & Wildlife	Meets	
WORK GROUP COMMENTS		- As described in previous comment, outreach will be tied to enrollment or protection goals and refined during implementation and adaptive management by the FCD. Therefore a specific outreach goal is not specified. See "Adaptive Management Action" column in Table 5-8 to see how outreach will be prioritized if goals are not being met and see Outreach Plan in Appendix E for additional information. - Section 5.2.1 (Text Box): The "implementation team" on Page 58 has been changed to "FCD." As described in other parts of the plan, FCD will lead implementation using support and resources as needed. - Stewardship Checklist has been included in Attachment 1. This was an error in the previous submittal, the wrong checklist was attached. - RCW 36.70A.720(1)(d) states that outreach and technical assistance must be provided to agricultural operators in the watershed. See the new Appendix E with an Outreach Plan to better define what outreach will look like during implementation. Note that specific numbers for outreach will be developed during implementation based on performance. We believe the level of detail offered in the Work Plan and Outreach Plan are sufficient to meet the requirements of RCW 36.70A.720 and is consistent with other approved Work Plans.
Tech Panel Comments at and after February 9, 2018 meeting	OK with changes / edits to be made	WSDA, WDFW, ECY and WSCC OK with addition of language about collecting information on the critical areas through the individual stewardship plan process.

Technical Panel member	Element [E][i] (check all that apply)	Element [E][i] Explanation
Commission	Needs clarification	Follows the Grant Co model to use types and amount of BMPs compared to 2011. Adequate if critical areas are evaluated to make sure they respond as intended. Critical area "benchmarks" are called "indicators" as with several other plans. Use of USDA NRI statewide data as a benchmark is inappropriate without supplemental sampling. County data suffers from very large standard error as a result of small sample size. On page 49, just a few conservation practices are listed as "examples" of practices that could serve to meet protection benchmarks. Which practices will provide protection for which CA? Will that practice provide 100% protection, or something less? Are their practices a landowner could do that don't provide benefits to the CA? Are those allowed to be used?
Agriculture	Meets	
Ecology	Meets, but needs more information in the plan	p. . 57. Actual disenrollment acreages should be tracked to validate the estimated disenrollment rate in the plan to see if protection benchmarks need to be increased to result in protection of critical area functions. The text only says the disenrollment rate may be reduced and it should note that if the disenrollment is higher than anticipated that the rate may need to be increased to meet the protection standard. For CARAs a better goal would be to "prevent groundwater contamination from agricultural sources".
Fish & Wildlife	Meets	
WORK GROUP COMMENTS		-Sample verification will be performed by FCD as described in Sections 5.3 and 5.4 to evaluate conservation practices and critical areas. - USDA NRI data is not being used as a benchmark, it is being proposed as indicator data used for informing trends. - See Tables 5-1 through 5-5 for conservation practices that can be tied to critical areas protection. Conservation practice effectiveness is evaluated using CPPE as described throughout Section 5 (see lines 1067-1076) and Appendix C. As described in Section 5.4, FCD will conduct random sample verification to confirm effectiveness. - The disenrollment rate will be tracked by FCD as described in Section 5. As described in previous comment, a note clarifying disenrollment rate adjustments was added to page 57. - The CARA goal as described in Table 5-2 is focused on preventing groundwater contamination from agricultural sources.
Tech Panel Comments at and after February 9, 2018 meeting	OK	WSDA, WDFW, ECY and WSCC ok with changes.

Technical Panel member	Element [E][ii] (check all that apply)	Element [E][ii] Explanation
Commission	Needs clarification	Same as above
Agriculture	Meets	
Ecology	Meets, but could have more information in the plan	Table 5-7, last column, please clarify if it is the cumulative number of acres enrolled or is it adjusted based on actual disenrollment? Clarify if it was adjusted for the 25,000 acres disenrolled from CRP since 2011 referenced on p.48
Fish & Wildlife	Meets	
WORK GROUP COMMENTS		- See previous response. - Table 5-7 column numbers are adjusted based on actual disenrollment. While we acknowledge that CRP provides specific critical areas protection functions, it is not accounted for as meeting the goals and benchmarks due to the lack of long-term commitment and unpredictable fluctuation based on funding availability.
Tech Panel Comments at and after February 9, 2018 meeting	OK	WSDA, WDFW, ECY, WSCC ok with changes.

Technical Panel member	Element [F] (check all that apply)	Element [F] Explanation
Commission	Needs clarification	Work Group, not FCD, is identified on page 73, line 1353. Not sure this is what is intended from reading the rest of the document. VSP checklist refers to item D, but that identies FCD as responsible for outreach, not necessarily technical assistance. FCD identified in line 830 on page 41 as being "available" to provide technical assistance, not "responsible". FCD identified as "VSP Lead" on page 66, line 1244 but is silent on technical assistance and could be read to conflict with statement on page 73, line 1353 as above.
Agriculture	Meets	
Ecology	Meets	
Fish & Wildlife	Meets, but could have more information in the plan	Could use more detail on which groups are offering what type of assistance
WORK GROUP COMMENTS		- Page 73, line 1353: Changed "Work Group" to FCD. - As described in the Work Plan, the FCD will provide technical assistance with support from other agencies and groups, as needed. Section 6.2.1 includes a description of what type of technical assistance can be provided during implementation and Table 6-1 provides specific examples of groups and the types of assistance they can provide. - Throughout the Work Plan: Made edits to indicate that FCD is responsible for technical assistance as suggested.
Tech Panel Comments at and after February 9, 2018 meeting	OK	WSDA, WDFW, ECY, WSCC ok with changes.

Technical Panel member	Element [G] (check all that apply)	Element [G] Explanation
Commission	Needs clarification	Work group is identified on page 73, line 1353. Others identified at Appendix D. An "implementation team" is mentioned on page 58, lines 1085-1086 - what is that? "Organization Leads" are identified on page 74, section 6.2.1 lists "FCD.... supported by other agencies." None of this shows how the entity will be supported to ensure ISPs are done to meet goals and objectives of the plan.
Agriculture	Deficient	Need more description of what the technical service provider will use or develop for an ISP. Include a checklist or some other tracking tool.
Ecology	Deficient	Work Plan needs stewardship checklist added to evaluate this section.
Fish & Wildlife	Meets, but needs more information in the plan	ISPs are lacking. As per conversation on Jan 12, need to include ISP and/or checklist. Include information on what is recorded and how that relates to benchmarks.
WORK GROUP COMMENTS		- Page 58: Changed "implementation team" on Page 58 to "FCD" and made other edits to state that FCD is responsible for providing technical assistance per previous comment. - Stewardship Checklist has been included in Attachment 1 - Section 6.2: Added text: "An individual stewardship plan (ISP) is defined by the Franklin County VSP work group as synonymous with the definition of a "farm plan" as described in RCW 89.08.560. The ISP is a plan prepared by a conservation district in cooperation with a landowner or operator for the purpose of conserving, monitoring, or enhancing renewable natural resources. ISPs can include, but are not limited to, provisions pertaining to: a) Developing and prioritizing conservation objectives; b) Taking an inventory of soil, water, vegetation, livestock, and wildlife, including the preparation of a VSP checklist included as an attachment to the ISP identifying potential applicable conservation practices; c) Implementing conservation measures, including technical assistance provided by the district; d) Developing and implementing livestock nutrient management measures; and e) Developing and implementing plans pursuant to business and financial objectives ISPs prepared by the Conservation District must be approved as final by a producer in writing before being determined final and complete. Consistent with RCW 42.56.270, ISPs are not disclosable as publicly available information, unless written approval is provided by a producer. Final ISPs prepared solely by a private sector technical assistance provider for a producer is disclosable to the public if a copy of the ISP is provided to the Conservation District."
Tech Panel Comments at and after February 9, 2018 meeting	Needs discussion	WSDA, WDFW, WSCC ok with changes; ECY - The stewardship checklist should indicate if there are critical areas on site in order to verify remote identification of CAs. ECY - Thanks for including the checklist. The stewardship checklist should indicate if there are critical areas on site in order to verify remote identification of CAs. The checklist should also allow producers to indicate practices that they are interested in doing. For habitat, suggest taht conservation practices that enhance wetlands and riparian and upland habitats should be listed as they are on table 5-6 & 5-9. Suggest rephrasing the question on p. 4 of the checklist to "Conservation Practices" The title as it now reads, seems to indicate that you just want data on existing practices when the checklist allows producers to identify practices that they are interested in.

Technical Panel member	Element [H] (check all that apply)	Element [H] Explanation
Commission	Needs clarification	Did not find any statement referencing role of other existing development regulations. Found one note re: buildings at page 34, line 731. Page 6 Figure 1-1 lists examples of "regulatory underpinnings" which include the "CAA, ESA, etc." but no explanation given here for those federal statutes. Also, Table 3-10 on page 38 mentions the "CWA, CAA, ESA and others" as part of agricultural viability analysis, but no further explanation is provided. Section 6.4 on page 77 covering existing programs. However, a bare statement of "These resources have been incorporated into this Work Plan to the maximum extent practical, consistent with the intent of the VSP" is all that explains how they are incorporated. See page 77, lines 1455-1456. How does Table 6-3 on page 78 add any sort of explanation of how existing plans or regulations are of assistance to the work plan? Page 79, Section 6.4.4 lists the regulatory environment, but also just make cursory reference to the CAA, CWA, ESA and Hydraulic Code with more explanation. Appendix D, pages 6-7 has related plans and programs - explain HOW do these state regs apply to VSP. Just because it's a pesticide regulation, how does that affect VSP?
Agriculture	Meets	
Ecology	Meets	
Fish & Wildlife	Meets, but could have more information in the plan	What exactly was pulled from other plans into the workplan? Table or narrative would be useful
WORK GROUP COMMENTS		- Section 5, Tables 5-1 through 5-5: Added new row to each table to include plans and programs incorporated for each critical area and related conservation practices. - Appendix D, Tables 4 and 5 (page 10-14) clearly describes the VSP intersect with applicable federal, state, and local regulations.
Tech Panel Comments at and after February 9, 2018 meeting	OK	WSDA, WDFW, ECY, WSCC ok with changes.

Technical Panel member	Element [I][i] (check all that apply)	Element [I][i] Explanation
Commission	Needs clarification	Table 5-7 should be what meets this but is unclear as to what is baseline, annual or total. Participation is discussed on page 67, lines 1276-1282. 10% random sampling of projects described on lines 1283-1285 on page 67. 120% established as a "trigger" for participation on page 68, lines 1290-1296. Table 5-8 lists goals for participation, but the measure is "sufficient" participation to meet the goals - don't see where "sufficient" is defined, see page 69. Lines 1368-1374 on page 74 also discuss participation goals and efforts. Clarify and tie these sections together.
Agriculture	Meets, but needs more information in the plan	Needs more information about the universe of participants and what are the thresholds for participation. Note that the numbers provided can change over time and be refined.
Ecology	Meets, but needs more information in the plan	Identified estimated annual participation. Table 5-8 clarify what your targets are for outreach, Table 5-8, the first row for sufficient participation: In the third column, Adaptive management threshold, what is the threshold? it lists potential causes of not meeting the benchmark, but it does not include an adaptive management threshold that the other two rows have - e.g. Enrollment declines below protection benchmark. Table 5-9 Clarify what the 10% represents - 10% of enrolled acres, 10% of ISPs or 10% of areas of intersect with CAs,
Fish & Wildlife	Meets	
WORK GROUP COMMENTS		- RCW 36.70A.720(I)(i) states "Establish baseline monitoring for participation activities and implementation of the voluntary stewardship plans and projects." This Work Plan tracks and monitors participation through enrollment of new acres of conservation practices though Individual Stewardship Plans and the Self-Assessment Checklist (see Attachment 1). Additionally, to ensure correct implementation of conservation practices outside of NRCS, FCD will verify 10% of self reported projects (see Direct Monitoring in Section 5.4). - Section 5.4: Section title has been updated to "Monitoring and Adaptive Management" for added clarification - As described in previous comment, outreach will be tied to enrollment or protection goals and will be refined during implementation and adaptive management. Therefore, target numbers for outreach are not specified. See "Adaptive Management Action" row in Table 5-8 to see how outreach will be prioritized if goals are not being met and see Outreach Plan in Appendix E for additional information. - Table 5-9: 10% number refers to sample verification as described in the text preceding the table (see Lines 1283-1289).
Tech Panel Comments at and after February 9, 2018 meeting	Needs discussion	WSDA, WDFW and WSCC ok with changes; ECY - This needs discussion - Table 5-8 I did not see how comment on the need for a threshold for "sufficient participation" was addressed. Should tie back to what your adaptive management threshold is for participation at 120% of target practices p.68 and table 5-9; As discussed please add the following information in the work plan: There are roughly 1,100 land owners in Franklin County whose land intersect with critical areas. FCD will commit to reaching out to 10% of the producers that operate those lands each year using the methods described in the Outreach Plan in Appendix E. As part of the adaptive management program, this percentage may change based on available funding and resources and/or how the county is tracking toward the goals and benchmarks described in the Work Plan during implementation.

Technical Panel member	Element [I][ii] (check all that apply)	Element [I][ii] Explanation
Commission	Needs clarification	Average annual for 2011 through 2016 provided in table 5-7. What was 2011? That is the baseline year per VSP RCW.
Agriculture	Meets	
Ecology	Meets, but needs more information in the plan	see i(i) describe what you will be monitoring to determine if you have sufficient participation as listed in table 5-8.
Fish & Wildlife	Meets, but could have more information in the plan	Tracking stewardship activities that do not meet NRCS standards but still are a net-gain for CA protection is important. Describe which and in what manner CPPE scores were tailored for Franklin Co
WORK GROUP COMMENTS		"- RCW 36.70A.720(I)(ii) states "Establish baseline monitoring for stewardship activities." Monitoring the acres of land participating in conservation practices using CPPE will determine if protection and enhancement benchmarks are met. The 2011 baseline is correlated with all conservation practices that have been disenrolled since 2011. Therefore, if conservation practices are equal or more than the baseline they provide equal or more benefit to critical areas and the protection benchmark is being met. Thus, tracking and monitoring disenrolled practices and newly implemented practices is equal to tracking 2011 baseline conditions. The units of measurement for conservation practices will be based on the unit found within NRCS practice codes (ex. Fence = Feet, Critical Area Planting = Acres, Waste Storage Pond - No.) - Section 5.2.1: Added another bullet to text to describe calculating the change from baseline conditions: "Calculating change from baseline conditions is the final step in determining the effect that conservation practices have on critical areas functions and values. This is completed by converting the quantity of conservation practices (based on CPPE scores) to a functions score. This acts to normalize the data and account for the differing amount of benefit provided by different practices. Initial results based on 2011 to 2016 participation data in key stewardship practices are provided in Appendix C."
Tech Panel Comments at and after February 9, 2018 meeting	OK	WSDA, WDFW, ECY and WSCC ok with changes. ECY - Please add what tools/techniques will be used to track and report on the stewardship activitites (i.e. acres, linear feet)

Technical Panel member	Element [I][iii] (check all that apply)	Element [I][iii] Explanation
Commission	Needs clarification	1) Unclear if groundwater sampling is intensive enough to be meaningful. Some description of sampling intensity and variability would be helpful. 2) Aerial imagery not well fleshed out. Would like to see more specificity about what's being looked for and how. Principles are okay, but could substitute any other term for imagery (say, "statistics") and not learn much more. An example that provides more specificity without constraining an analyst might be "change in NDVI in shrub-steppe habitat (or rangeland) from baseline", or "acres of wetland detected in the agricultural intersect areas". Also helpful to provide more specificity around quality control - something like: random sample of field verification sites sufficient to determine that imagery analysis is xx% accurate at yy confidence level. Per presentation discussion, could include relevance and linkage of farm visit assessments on CA functions or presence.
Agriculture	Meets	
Ecology	Deficient	Add monitoring for wetland areas. Wetlands should be addressed separately from the more general habitat category. Will the same methods for habitat areas be used for wetlands i.e. NAIP imagery, on the ground verification through ISPs? Clarify how the monitoring data will be verified, will there be on the ground verification of critical areas during ISP development and monitoring? Tabled 5-10 Clarify what is "significant trend", loss of X% of CA?
Fish & Wildlife	Meets	
WORK GROUP COMMENTS		"- RCW 36.70A.720(I)(iii) states "Establish baseline monitoring for the effects on critical areas and agriculture relevant to the protection and enhancement benchmarks developed for the watershed." In this Work Plan monitoring of enrollment and sample verification of conservation practices and correlation with CPPE will determine if protection and enhancement benchmarks are met. Additionally, indicators will be monitored to indirectly determine the effect conservation practices have on critical areas functions. VSP regulation states that the plan should use "existing resources by relying upon existing work and plans in counties and local watersheds." This Work Plan is based monitoring that can be achieved with currently available data. If adequate funding is provided additional monitoring may be conducted as appropriate to further analyze indicators. - Section 5.2.1 describes how critical areas functions and conditions will be monitored: "Ultimately, the goals and benchmarks are evaluated based on whether critical areas and associated functions and values are protected and/or enhanced. This will be determined by evaluating random samples of critical areas (including a representation of lands with conservation practices documented and lands where practices are not documented) using aerial imagery, GIS methods, and site visits as described in this section." The CD will look for opportunities to use the latest technology and information to complete this tracking effort. - Sampling and ground-truthing of available data will be conducted per available funding and resources. For the purposes of this Work Plan, sample verification of conservation practices (10%) is left at a minimum level but this is only part of the picture of the full monitoring that will occur annually. Every management practice implemented through a government program in the County is verified annually (100%). Every structural conservation practice (e.g., riparian planting or irrigation conversion) is verified in year 1 (100%) and then 10 percent would be verified in subsequent years. The ten percent verification also includes all self-funded projects that are reported to the County. Because many practices are implemented on a multi-year basis, this 10 percent will be a growing value that will increase each year that additional practices are reported to the CD under VSP implementation. In 2019 the CD will verify 10 percent of at least 109 structural practices that have been implemented 2011 to 2016 plus any others that are documented in 2017 and 2018. Future practices will be added to this amount, less any documented discontinuation. This monitoring will be further supplemented by the habitat and other indicators and associated GIS analysis of critical areas that the CD will evaluate at least every two years. If additional funding is made available, additional sampling may occur. Similarly, for ground-truthing, the amount conducted will be based on available funding and resources. - Note that aerial imagery will be used to monitor presence or absence of shrub-steppe and wetlands, not density or quality. - Also note that this Work Plan focuses on the objectives for monitoring, not the methods, because it is expected that monitoring methodology will change over time. - Deleted "significant" from "significant trend" in Table 5-10 and also specifically mentioned wetlands as part of habitat indicators evaluation every two years using GIS/aerial imagery evaluation. Ground-truthing will include verification of presence/absence of mapped critical areas to suppport the findings and conclusions from the aerial imagery evaluation.
Tech Panel Comments at and after February 9, 2018 meeting	Needs discussion	"WSCC, WSDA, WDFW ok with changes. WSCC concerned, as with Grant County plan, that proposed use of indicators may be insufficient to detect critical area function degradation due to small sample size, resulting in a false conclusion that benchmarks (practices) are protecting critical areas (Type II sampling error). Analysis should evaluate if sample size is sufficient, and if not, Workgroup should adaptively manage to collect additional information so parameters examined and sample size are sufficient to conclude that no degradation in critical area function is occurring." ECY - This needs discussion. I did not see the addition of monitoring the wetland critical area. It needs to be pulled out and not lumped under "habitat" for assessing effects on critical areas. As the plan now reads, wetlands are not specifically monitored and they need to be in order to determine if wetland functions and values are being protected. This serves as a validation of the assumption that CPPE scores will show if protection of CAs is occurring. The plan says thst there will be some ground truthing to verify the accuracy of the remote sensing (aerial imagery, GIS tools), please provide a description of what the ground truthing will entail. please add more specificity of what will be evaluated in the aerial imagery monitoring such as change in wetland area or cover. Explain which monitoring will be done and which monitoring will only be done if additional funds are attained. Some of the implementation funding should be set aside for monitoring.

Technical Panel member	Element [J] (check all that apply)	Element [J] Explanation
Commission	Needs clarification	Adaptive management stated as "at least every 5 years", page 67, line 1268. Also at line 1310. What if a big change is seen after only 2 years? Table 5-9 : Adaptive management trigger stated at 120%. How does that compare to standard deviation of 2011 to 2016 data reported in table 5-7? Would suggest that trigger be set such that adaptive management occurs when change in acres is > one standard deviation, whatever that is. Should be able to calculate that based on average 2011-2016 data. That would also increase the frequency of review and adaptive management so corrections are caught more quickly and are solvable in size rather than waiting. Table 5-10: without statistics, can't have "Significant trends". Should restate to "increase in number of listings" (for Ecology water quality stations source). Under monitoring method, what will be the action if data isn't available for those items noted as "if available"? Unclear as to how Table 5-9 and 5-10 will be used, see pages 70-71. Reporting clear in Table 6-2 on page 76
Agriculture	Meets	
Ecology	Meets, but needs more information in the plan	Clarify that five year reporting be ongoing past 2026. p.76
Fish & Wildlife	Needs clarification	Table 5-9: describe were the 10% verification figure comes from
WORK GROUP COMMENTS		- Adaptive management can occur at intervals less than every 5-year but the Work Plan stipulates that must occur at least every 5-years. The adaptive management trigger is referring to a low amount of new participation that may indicate a need for adaptive management. The adaptive management process would then begin to determine if modifications to the plan are required. - VSP regulation states that the plan should use "existing resources by relying upon existing work and plans in counties and local watersheds." Monitoring of conservation practices leverages the tracking that NRCS and FCD are already completed, this tracking will determine if the County is meeting the goals and benchmarks in the Work Plan. Monitoring of indicators other than habitat indicators relies on existing work to conduct monitoring. If adequate funding is provided additional monitoring of water quality, hydrology, and soil function indicators may be conducted as appropriate to further analyze indicators. - Section 6.3: Added clarification that status reports will be prepared "every 2 years thereafter" and performance reports will be prepared "every 5 years thereafter." - Table 5-9: 10% verification figure origin is described in preceding text under "sample verification" subheading as described in previous comment.
Tech Panel Comments at and after February 9, 2018 meeting	Needs discussion	- VSP regulation states that the plan should use "existing resources by relying upon existing work and plans in counties and local watersheds." Monitoring of conservation practices leverages the tracking that NRCS and FCD are already completed, this tracking will determine if the County is mee

- Section 6.3: Added clarification that status reports will be prepared "every 2 years thereafter" and performance reports will be prepared "every 5 years thereafter."
- Table 5-9: 10% verification figure origin is described in preceding text under "sample verification" subheading as described in previous comment.

Technical Panel member	Element [K] (check all that apply)	Element [K] Explanation
Commission	Needs clarification	Section 5.3 referenced in VSP Submittal Checklist. Nothing found there that commits workgroup to assist State agencies. Some reference to state programs, but nothing indicating how the Workgroup or VSP program in Franklin County will assist.
Agriculture	Meets	
Ecology	Deficient	I did not see this referenced.
Fish & Wildlife	Meets	
WORK GROUP COMMENTS		- VSP Overview and Checklist provided in Attachment 1. - Section 5.3: Added a sentence stating "If new information is collected during monitoring that is not confidential it will be made available to the appropriate agencies as applicable to assist their monitoring programs."
Tech Panel Comments at and after February 9, 2018 meeting	OK	WSDA, WDFW, ECY and WSCC ok with changes.

Technical Panel member	Element [L] (check all that apply)	Element [L] Explanation
Commission	Needs clarification	No statement found re "other reporting requirements" in section 6.3 as referenced by VSP Submittal Checklist
Agriculture	Meets	
Ecology	Meets	
Fish & Wildlife	Deficient	
WORK GROUP COMMENTS		- The other reporting requirements per RCW 36.70A.720 include: "Not later than five years after the receipt of funding for a participating watershed, the watershed group must report to the director and the county on whether it has met the work plan's protection and enhancement goals and benchmarks" and "Not later than ten years after receipt of funding for a participating watershed, and every five years thereafter, the watershed group must report to the director and the county on whether it has met the protection and enhancement goals and benchmarks of the work plan." These reporting requirements are described in Section 6.3, 5-year Performance Reports.
Tech Panel Comments at and after February 9, 2018 meeting	OK	WSDA, WDFW, ECY and WSCC ok with changes.

Technical Panel member	Other comments on the Work Plan		
Commission			
Agriculture			
Ecology			
Fish & Wildlife	Overall, a very solid plan. The navigation/organization of the plan could be a bit tighter. For example, have page numbers incremental through the plan; move the VSP Workplan Submittal Checklist (Attachment 1) near the front of the document. Also, do not see where the "VSP Overview and Checklist" section is in document (referenced in Attachment 1, pg 3, row g, under "Response/Location in Work plan"		
WORK GROUP COMMENTS	-Thank you. Page numbers have been reviewed and adjusted as appropriate. The VSP Work Plan Submittal Checklist is moved to the front of the document and the VSP Overview and Checklist appropriately added as Attachment 1.	Comment Letter from Ecology: The Work Plan was developed by a watershed work group comprised mostly of individuals with limited hydrogeology experience and has a target audience of agricultural producers. We understand Washington State Department of Ecology's specific concerns regarding elevated levels of nitrate in groundwater and the potential relationship to agricultural activities on excessively drained soils. Many of the conservation practices discussed in the plan, such as nutrient management, address this concern directly. The Work Plan, however, is focused on water quality functions and values provided by specific critical areas. The ecological functions of critical aquifer recharge areas address land uses that could threaten localized protection of specific municipal water supplies. CARAs in Franklin county are not intended to address the issues of nitrification within large aquifers spanning multiple counties. Franklin County is part of the GWMA and has adopted the GWMA Plan which includes the activities that Ecology describes. The GWMA Plan is incorporated the Work Plan.	Comment from Debbie Berkowitz: We assume the comment letter from Ms. Berkowitz was taken into account during Tech Panel review of the Work Plan as requested.
Tech Panel Comments at and after February 9, 2018 meeting	N/A		