available on the City's website expands on the previous goal in the Environment element with the following vision statement:

> *"Maintain a system of habitat, recreation lands, and facilities in Palouse that defines and enhances the built and natural environment. Support and nurture plant and wildlife habitat, offer a well-balanced range of recreation opportunities which enriches the lives of Palouse's citizens."*

Policies and strategies designed to achieve this vision are included in the plan which would significantly improve ecological function in the City.

4 EXISTING AND ONGOING PLANS AND PROGRAMS

State, regional, and local agencies and organizations are actively involved in shoreline restoration, conservation, and protection in and around Whitman County. These partners and their local roles in shoreline protection and/or restoration are identified below.

4.1 Whitman County Comprehensive Plan

The County's Comprehensive Plan contains an Environmental Quality and Conservation Element providing policies related to conservation of natural resources. The County has developed guidelines for implementing Comprehensive Plan goals (See Section 3) related to natural resource protection. These focus on policies, regulations, and procedures governing critical and sensitive areas and include:

- Designating and mapping critical environmental sites and ceasing exemption of dwellings within designated areas from Environmental Impact Statement requirements when a Threshold Determination of Significance is reached.
- Incorporating goals and guidelines into Whitman County ordinance governing SEPA review.
- Use the removal of the exemption (above) as an opportunity to evaluate impacts of single-family homes, employ mitigation measures, preserve vegetative cover, and modify locations of buildings and roads.

The Plan presents implementation guidelines that incorporate procedural and regulatory frameworks.

4.2 Whitman County Critical Areas Ordinance

The County's Critical Areas Ordinance (CAO) is contained in Whitman County Code (WCC) Chapter 9.05. The CAO is designed to implement the goals, policies, guidelines, and requirements of the Whitman County Comprehensive Plan and the Growth Management Act. The CAO was adopted in 1994, and was most recently revised in 2012. The regulations specify minimum Riparian Habitat Area and wetland buffer widths and limit the type and extent of development that can alter critical areas. Regulations encourage no net loss of critical area function and apply to geologically hazardous areas, critical aquifer recharge areas, and frequently flooded areas in addition to wetlands and streams/shorelines.

4.3 Whitman County Parks and Recreation Comprehensive Plan

Some shoreline areas include portions of County parks. The Whitman County Parks and Recreation Comprehensive Plan for 2004-2009 (the most recent available) includes goals and strategies for the expansion of environmental programs. Some action items focus on development of environmental interpretation programs and management practices that will maintain parks, at least in part, as natural areas and wildlife sanctuaries (Whitman County 2004).

4.4 Port of Whitman County Comprehensive Plan 2010-2015

While focusing efforts on industrial real estate development, transportation, economic development, water-related recreation, the Port of Whitman County "*endeavors to balance economic development and growth with good environmental stewardship*." The Port recognizes the need to consider more restrictive stormwater regulations and watershed ecological needs. The Port plan includes among its objectives incorporating proactive environmental planning into industrial development, and specific projects recognize the need for an environmentally friendly approach in order to preserve and protect the watershed.

4.5 Palouse Wind Compensatory Habitat Mitigation Plan Fund

In 2011, Whitman County issued a Conditional Use Permit (CUP) for a large wind energy facility. During the environmental review for the Project, Whitman County considered the WDFW's Wind Power Guidelines. The Guidelines inform siting agencies, the wind industry, and other wind energy stakeholders of recommended methods of baseline and operational monitoring and mitigation approaches for impacts to habitat and wildlife.

In accordance with the WDFW Guidelines and the CUP, the Palouse Wind Compensatory Habitat Mitigation Plan (Mitigation Plan) was established for the Project. This Mitigation Plan outlines strategies for mitigating impacts to Native Perennial Grasslands and Palouse Prairie remnants, including the funding of individual mitigation projects within Whitman County. Landowners owning land in Whitman County, tribal and local governments, educational institutions, non-profit organizations, such as watershed councils and Soil and Water Conservation Districts, and other community groups and organizations may apply to the County for funding for projects which propose to restore or expand existing Native Perennial Grassland habitat, including Palouse Prairie remnants (Whitman County n.d.).

4.6 Cities and Towns Comprehensive Plans and Critical Areas Regulations

4.6.1 City of Colfax

The Colfax Comprehensive Plan contains an Environment element which identifies seven areas to direct future planning and projects. None of the issues identified focus specifically on restoration priorities but a statement is included that "the city should strongly encourage the conservation of natural resources".

Colfax also has critical areas regulations contained in Colfax Municipal Code Title 17, adopted via Ordinance 13-02 in May 2013. In those regulations, the City requires wetland buffers of between 50 and 250 feet based solely on wetland category (CMC 17.14.040.C). No stream buffer widths are specified, although the regulations require preparation of a habitat management plan based on best available science and a demonstration that a project would not degrade functions and values of the habitat (CMC 17.14.060).

4.6.2 Town of Malden

Malden has critical areas regulations contained in Malden Municipal Code Chapter 17.12, adopted via Ordinance No. 444 in July 2007. In those regulations, the City requires wetland buffers of between 50 and 250 feet based solely on wetland category (MMC 17.12.050.C). No stream buffer widths are specified, although the regulations require preparation of a habitat management plan based on best available science and a demonstration that a project would not degrade functions and values of the habitat (MMC 17.12.070).

4.6.3 City of Palouse

The Palouse Comprehensive Plan (1997) includes an implementation strategy "to protect and restore the Palouse River's water quality and to diminish future flooding, develop partnership with upstream parties to improve upriver watershed management". It also includes several techniques for preserving the remaining natural areas including obtaining conservation easements, purchasing critical land from willing landowners, swapping non-critical City owned land for privately owned natural areas, using a Conservation Land Trust to acquire and manage natural areas and designation some of the natural areas as critical wildlife habitat conservation areas (City of Palouse 1997).

Palouse also has critical areas regulations contained in Palouse Municipal Code Chapter 17.26, last updated in 2007. In those regulations, the City requires wetland buffers of between 50 and 250 feet based solely on wetland category (PMC 17.26.050). No stream buffer widths are specified, although the regulations require preparation of a habitat management plan based on best available science and a demonstration that a project would not degrade functions and values of the habitat (PMC 17.26.070).

4.6.4 City of Pullman

This City of Pullman Comprehensive Plan (1999) was prepared to represent the vision for the future growth of Pullman and means by which to realize that vision. It includes a Parks and Open Space Element (Chapter 9) which recognizes that riparian corridors represent unique recreational opportunities. It states that "the shoreline of the South Fork of the Palouse River holds special significance to the community and the city should place a priority upon acquiring parcels of land along the shoreline, as they become available." Chapter 9 includes goals and policies related to restoration of the South Fork of the Palouse River and protection of riparian corridors, as well as establishment of greenways to link open spaces together (City of Pullman 1999).

Pullman has critical areas regulations contained in Title 16 of the Pullman Municipal Code, most recently updated in 2007. In those regulations the City specifies recommended minimum Riparian Habitat Area buffer widths of 50 feet to 150 feet depending on the stream type (PMC 16.50.470). Wetland buffers of between 25 and 200 feet are required based on wetland category and intensity of proposed land use (PMC 16.50.270).

4.6.5 City of Tekoa

Tekoa has critical areas regulations contained in Ordinance 764, which amends Tekoa Municipal Code Chapter 4.24, Critical Areas Protection. These regulations from 2007 require wetland buffers of between 50 and 250 feet based solely on wetland category (TMC 4.24.050.C). No stream buffer widths are specified, although the regulations require preparation of a habitat management plan based on best available science and a demonstration that a project would not degrade functions and values of the habitat (TMC 4.24.070).

4.7 Washington State Conservation Commission

The Conservation Commission guides the state's Conservation Districts in their common mission to educate and inform landowners, managers, and other stakeholders about the value and need for natural resource conservation. Through the Conservation Districts, the Conservation Commission implements non-regulatory conservation practices. Four conservation districts are active in Whitman County which are identified in the sections below.

The Washington State Conservation Commission also produces special studies and reports. The report, *Salmonid Habitat Limiting Factors Water Resource Inventory Areas 33 (Lower) and 35 (Middle) Snake Watersheds, and Lower Six Miles of the Palouse Rive*r (Kuttel 2002), was designed to identify limiting factors in the mainstem Snake River and Palouse River below Palouse Falls. The results of the analysis were used to rate habitat conditions on private and public lands in the watersheds and generate recommendations (see Section 5).

The Conservation Commission in cooperation with the USDA Farm Service Agency administers the Conservation Reserve Enhancement Program (CREP). In Washington State, Whitman County is the second-largest recipient of CREP funds provided to volunteer landowners who dedicate riparian areas for protection and enhancement. In 2012, more than 1,200 Whitman County landowners received a combined total of $13,548,000 in CREP payments (http://farm.ewg.org/top_recips.php?fips=53075&progcode=total_cr&page=15&yr=2012). See Section 6.1.2 below for additional discussion.

4.7.1 Palouse Conservation District

The Palouse Conservation District completed the North Fork Palouse River Watershed Characterization (Resource Planning Unlimited 2002a) report in January 2002 to inform

an action plan to address problems within the watershed. The report was intended as a basic information source upon which planners could build planning efforts in the North Fork Palouse River watershed. The document provides guidance for ongoing efforts, including water quality monitoring, farming practices, livestock impacts, and other resource-related concerns. The North Fork Palouse Water Quality Improvement Plan (Resource Planning Unlimited 2002b), completed as a companion document to the Watershed Characterization, collates input from stakeholders within the watershed and serves as a framework for voluntary restoration efforts addressing water quality in the watershed. The *Palouse Watershed Plan* (HDR and EES 2007) was complete during WRIA 34's Phase 3 watershed planning effort. The plan recognizes that fish and wildlife habitat is dependent upon water resources, and includes both basin-wide and management area goals focusing on water quantity and quality.

The *WRIA 34 – Palouse Watershed Detailed Implementation Plan* (DIP) (Golder Associates, Inc 2009) is intended to provide a framework within which the recommendations, actions, and studies in the Palouse Watershed Plan (HDR/EES 2007) may be implemented. The Watershed Plan is intended as a tool to aid local decision-makers in identifying and prioritizing water resources management issues, and to facilitate solution development for these issues. The actions and strategies identified in the plan will help to correct altered conditions and maintain overall watershed health, attain compliance with the Clean Water and Endangered Species Acts, and contribute to the recovery of listed species and opportunities for recreational and tribal fisheries. Some of the goals outlined in the Palouse Watershed Plan translate to recommendations that may be addressed during implementation stages. These were ranked in the DIP to develop a prioritized list and implementation schedule. Appendix A of the DIP lists and tracks prioritized actions and includes lead and supporting entities.

4.7.2 Palouse Rock Lake Conservation District

The Palouse Rock Lake Conservation District promotes the conservation and enhancement of natural resources through private and public programs, education, and the dissemination of technical and scientific information in its mission. Water quality, soil erosion and soil quality are the top resource priorities in the District. Programs include a livestock program using Livestock Pasture Upgrades Along Creeks grant funds designated to provide cost-sharing for fencing, livestock crossings, stock tanks, and other livestock best management practices (BMPs) that help them protect water quality. As of 2010, more than 16 miles of the Palouse River had been protected and enhanced (https://fortress.wa.gov/ecy/publications/publications/1010039.pdf).

4.7.3 Whitman Conservation District

The Whitman Conservation District (WCD) provides programs and services to landowners and residents, including natural resource education and technical assistance. The Whitman Conservation District also has a cost-sharing program to help property owners implement BMPs that support improvements in water quality. The District's mission is "*to promote the wise, ethical and sustainable use of natural resource, by leadership in the education and assistance of all people in the District*."

The Long Range Resource Program of the Whitman Conservation District, revised in 2003, defines existing and new (as of 2003) programs and activities. Resource concerns addressed by the programs and activities include soil health and erosion, water quality, livestock issues, and wildlife. Additional programs extend to marketing, training, funding, education, and other activities that the District participates in or that are essential to operation of the District. Operating policies outlined in the Long Range Resource Program require an annual report and work plan to review accomplishments and present the goals for the subsequent year. The FY2014 Annual Work Plan lists milestones and benchmarks against which progress toward objectives are to be measured as the program operates, and details estimated funding needs for each proposed activity.

4.7.4 Pine Creek Conservation District

The Pine Creek Conservation District covers the northeast quadrant of Whitman County, including Pine Creek and a portion of the Hangman Creek watershed. Their mission is *"to make available technical, financial and educational resources, whatever their source, and focus or coordinate them so that they meet the needs of the local land manager with conservation of soil, water and related natural resources"*. Similar to the other Conservation Districts, the Pine Creek Conservation District has a cost-sharing program to help landowners defray costs of BMP implementation. The District also provides low-interest loans to support purchase of equipment that enables implementation of conservation measures.

4.8 Watershed Planning Units

Funding is provided through Washington's Watershed Management Act (WMA) for areas in Washington State that wish to undertake watershed level planning and specifies ground rules for use of the funding. The WMA identifies a Planning Unit as the group that develops and initially approves the watershed plan. The above conservation districts, plus others from each watershed, participate in the watershed planning process

for their region along with local landowners, other stakeholders and government agencies. Three Watershed Planning Units are active in Whitman County:

4.8.1 WRIA 34- Palouse Watershed Planning Unit

The Palouse Watershed Planning Unit helped develop the Palouse Watershed Plan (2007) for the entire Palouse basin. The plan includes an overview of the major planning issues in the region, strategies and tools to address the issue, basin wide management objectives and suggested actions to be taken (HDR and EES 2007).

4.8.2 WRIA 35- Middle Snake Watershed Planning Unit

The Middle Snake Watershed Planning Unit is comprised of representatives from Asotin, Columbia, Garfield, and Whitman Counties, the City of Clarkston, and the Asotin County Public Utility District. The initiating governments formed the group in 2002 which includes landowners and citizens, tribes, conservation districts, agricultural groups, environmental groups, state and federal agencies. They developed the WRIA 35 Watershed Detailed Implementation Plan in 2008. In June of 2011, they adopted an updated Detailed Implementation Plan, completing Phase 4 of the Watershed Planning Process.

4.8.3 WRIA 56- Hangman (Latah) Creek Watershed Planning Unit

Hangman (Latah) Creek's Watershed Planning Unit, representing local residents, governmental agencies, tribes, and other watershed stakeholders, formed to gather existing and new information and formulate recommendations for future water use in the sub-basin. The goals of the Planning Unit were to:

- Develop and investigate a water balance for the watershed
- Establish a means to present publish information and provide awareness and education about watershed issues
- Establish management guidelines to improve water quality, reduce suspended sediment loading, maintain and enhance fish and wildlife habitat, and maintain watershed recreational uses.

The Planning Unit developed a Water Resources Management Plan in 2005 (Spokane County Conservation District (SCCD) 2005).

4.9 Snake River Salmon Recovery Board

The Snake River Salmon Recovery Board (SRSRB) is the Lead Entity for salmon recovery efforts in the Snake River region. The SRSRB developed the Snake River Salmon Recovery Plan for SE Washington, which includes a recovery strategy based on the results of the Recovery Plan's limiting factors analysis and their recovery and restoration goals (SRSRB 2011).

The strategy emphasizes projects with long persistence time and benefits that address the widest range of environmental attributes. The strategy promotes recovery and restoration actions that include both immediate and long-term measures and that address the root causes of habitat degradation. Actions are focused on the protection and restoration of habitat, harvest, hatcheries, and hydroelectric and utilize both population and habitat approaches. The plan includes strategic guidelines for addressing basin-wide issues, as well as a table of site-specific actions (Appendix A of the plan).

4.10 Hangman Creek TMDL

A Total Maximum Daily Load (TMDL) is a water-body-specific management plan designed to limit further water quality impairments and to bring the affected waters into compliance with applicable water quality criteria. Hangman Creek is impaired by dissolved oxygen, bacteria and temperature. Ecology and the Spokane County Conservation District (SCCD) have worked together to develop a TMDL, also known as a water quality improvement plan. After the Environmental Protection Agency approved the TMDL in 2009, Ecology and the SCCD worked with agencies and organizations to develop an implementation plan outlining what needs to occur to meet water quality targets in the watershed and various commitments to the effort. Ecology published the final implementation plan in 2011. In November 2013, various implementing partners met to discuss the status of implementation (Ecology 2011).

4.11 Palouse River TMDLs

4.11.1 Mainstem

Ecology began studying the pollutants for the mainstem Palouse in 2005. The project includes four separate studies. The first study examined toxins. A TMDL report detailing how the Palouse River will achieve water quality standards for PCBs and dieldrin was approved in 2007.

The second study examined the levels and distribution of fecal coliform bacteria throughout the watershed. This study ran from May 2007-May 2008 and a report and implementation plan outlining actions to reduce bacteria were published in December 2010. EPA reviewed the report and approved it March 2011.

The third study examined water temperature. Water temperature affects the health and distribution of fish and other aquatic life. The Palouse River is impaired by high temperatures. The goal of this TMDL is to return the river's temperature regime to natural conditions, accomplished by reestablishing shade along the river's stream banks. The final version of the report was revised in response to stakeholder comments and was submitted approved by the EPA in November 2013 (Ecology 2013).

The fourth study examined dissolved oxygen, pH, and nutrients. Data on the Palouse River indicates that at times it has too little oxygen and a pH outside the range appropriate for fish and other aquatic life. The type and amount of nutrients in a waterbody can affect both oxygen and pH levels. Data for this study was collected in conjunction with the bacteria study and intensive surveys were conducted in summer 2007. A water quality improvement report addressing temperature is in development (Ecology 2014).

4.11.2 North Fork

The portion of the Palouse River from the Idaho border to Colfax is sometimes referred to as the North Fork Palouse River. (Note that in the Analysis Report, this segment was included in the mainstem Palouse discussion, identified as Reach 10- "North Fork Palouse Agriculture."). The north fork has impaired water quality standards for bacteria, dissolved oxygen and pH. In 2000, the Palouse Conservation District began the process of water quality monitoring and development of a plan to address fecal coliform contamination. Fecal coliform bacteria come from the intestinal tracts of humans and warm-blooded animals. It can indicate the presence of human and animal waste which may carry disease-causing organisms. The final water quality implementation plan "North Fork Palouse River Fecal Coliform Total Maximum Daily Load Water Quality Implementation Plan" was completed in 2006. A TMDL for temperature was approved in 2013 and a TMDL for dissolved oxygen and pH is currently in development and is expected to be approved by the EPA in late 2014 or early 2015. Recommended water quality improvement strategies include programs to assist landowners to install BMPs to improve riparian health and animal waste management (Ecology 2006).

4.11.3 South Fork

The South Fork Palouse River has water quality concerns over high temperatures, low dissolved oxygen, pH, bacteria and toxins. A toxins TMDL was approved in 2007 and a fecal coliform TMDL in 2011 (Washington State Department of Ecology 2007), (Washington State Department of Ecology 2011b).

4.12 U.S. Fish and Wildlife Service

In addition to its role is watershed planning groups, the U.S. Fish and Wildlife Service (USFWS) provides funding for restoration activities through the Partners for Fish and Wildlife, which provides direct financial and technical assistance for private landowners to conduct projects that improve fish and wildlife habitat. The USFWS also funds the Fisheries Restoration Irrigation Mitigation Program, which funds fish screening and fish passage improvements related to water diversions (See Tables 3 and 4).

4.13 Natural Resources Conservation Service

The USDA Natural Resources Conservation Service (NRCS) has a voluntary Wetlands Reserve Program (WRP) that "offer[s] landowners the opportunity to protect, restore, and enhance wetlands on their property." Under the program, NRCS will fund restoration of wetlands and riparian areas in exchange for permanent or 30-year protection of the subject area in the form of easements, contracts or agreements. If the property owner enters into a permanent or 30-year easement, NRCS will pay all or up to 75% of the easements value, respectively. According to the Program's website, "More than 11,000 of America's private landowners have voluntarily enrolled over 2.3 million acres into the Wetlands Reserve Program. The cumulative benefits of these wetlands reach well beyond their boundaries to improve watershed health, the vitality of agricultural lands, and the aesthetics and economies of local communities." Unfortunately, the mechanism of the NRCS contracts does not presently allow for accurate reporting of Whitman County acreage enrolled in the WRP. As of February 2014, the WRP has been replaced with the Agricultural Conservation Easement Program (ACEP). WRP contracts established prior to 2014 are still in effect. See Section 6.1.3 for more discussion.

4.14 Palouse-Clearwater Environmental Institute

The Palouse Clearwater Environmental Institute (PCEI) is a nonprofit organization with the mission of increasing citizen involvement in decisions that affect the region's environment. Staff and volunteers work to preserve, protect, and restore ecosystems in

the Palouse-Clearwater region. Their work includes riparian and wetland restoration, watershed planning, water quality protection, and biological monitoring with a focus on native plants and wildlife. Projects are collaborative in nature and are always science-based and community-centered.

In 2011, PCEI started an "Adopt-A-Stream" program in the City of Pullman as a collaborative project between PCEI, Pullman and private landowners. The goal of the program is to engage community members, students and businesses in the maintenance and beautification of local natural resources. PCEI also organizes an annual stream clean-up project in Pullman and has completed several restoration projects in the Palouse watershed (Palouse-Clearwater Institute 2014).

4.15 Other Volunteer Organizations

Many recreational groups and private organizations are active in Whitman County. While some of these groups may not have historically worked in the shoreline jurisdiction of Whitman County, this does not preclude involvement in voluntary restoration activities in the future. Probably the most important volunteer is the landowner that acts as a steward of the land following the completion of the project. Potentially active groups include:

- Palouse Audubon Society
- Palouse Water Conservation Network
- Palouse Prairie Foundation
- Trout Unlimited
- Ducks Unlimited

5 IDENTIFICATION OF RESTORATION OPPORTUNITIES

Restoration recommendations have been proposed by the County's restoration partners, described in Chapter 4, based on watershed and regional restoration planning efforts. Recommendations identified in these planning efforts that are applicable to the County and City shorelines are identified below. The expected time to implement these projects was either derived directly from the planning documents or estimated based on the complexity of project implementation (i.e. riparian planting projects can be implemented

quickly, with little time required for permitting, design, and analysis compared to artificial storage projects). A very brief summary of the expected benefit of project implementation is also described.

5.1 County- and City-wide

Some of the primary issues affecting the region's streams and waterbodies that may be addressed with restoration or protection include: (1) habitat degradation with the alteration of riparian zones and conversion of small channels to drainage ditches; (2) poor water quality where fecal coliform bacteria, nutrient levels, and water temperatures often exceed Washington state standards; and (3) soil erosion from storm water runoff with the conversion to agriculture. In the Palouse River basin particularly, land use changes have led to the loss of most of the basin's riparian habitat and wetlands, contributing to erosion, increased sedimentation, and higher water temperatures (HDR and EES 2007). Water quality concerns are primarily from non-point sources, including: erosion, livestock, fertilizers, and septic systems (HDR and EES 2007). In the Middle Snake River Watershed, restoration goals are often aimed at achieving healthy, sustainable, and harvestable salmonid populations.

Table 2 highlights potential restoration opportunities for the Palouse River, Middle Snake River, and Hangman Creek Watersheds. While many of these items are more applicable to the unincorporated areas of the County, many of them are universally applicable in the Cities as well.

Table 2. Restoration recommendations for Whitman County shorelines identified through past planning efforts.

Actions/Waterbody	Expected Time to Implement	Benefit	Source
Palouse River Watershed			
Implement habitat improvement projects involving construction or placement of instream structures	0-3 years	water quality, streambank stabilization	Palouse Watershed Plan 2007
Implement habitat improvement projects involving out-of-stream riparian restoration or enhancement	0-3 years	stream temperature, water quality, streambank stabilization	Palouse Watershed Plan 2007
Move river dikes back from existing river channels to allow for floodplain restoration and channel maintenance	5-10 years	Instream flow, habitat enhancement	Palouse Watershed Plan 2007
Relocate campgrounds further from stream edges where assessments show potential for erosion and other adverse effects	5-10 years	Streambank stabilization	Palouse Watershed Plan 2007
Manage grazing in riparian areas by installing livestock exclusion fencing and	ongoing	water quality, streambank	Palouse Watershed

Actions/Waterbody	Expected Time to Implement	Benefit	Source
off-stream watering		stabilization	Plan 2007
Work with individual landowners to review pesticide and fertilizer use, and to implement the following best management practices to limit water quality impacts: 1. Enhance riparian areas; 2. Urban/rural education program; 3. Conservation tillage	ongoing	Water quality	Palouse Watershed Plan 2007
Reduce sedimentation by using no-till/direct seed, sediment basins, strip cropping, and other BMPs.	ongoing	Water quality	WA Conservation Commission
Middle Snake River Watershed			
Near Shore Assessment WRIA 35 – Investigate alternatives for modifying near shore habitat in the Snake River Reservoirs to benefit salmonids survival.	5 years	Habitat improvement	Snake River Salmon Recovery Board
Head Cut Barrier Removal (Alkali Creek) (HWS# 5-00133) - Investigate the severity of the fish barrier and determine a project design to rectify passage issues.	3 years	Barrier removal	Snake River Salmon Recovery Board
Palouse Prairie Protection (HWS# 32-00161) – protect native wet uplands through fencing or conservation agreements; restoration through digging or plugging old drain ditches no longer in use.	3 years	watershed retention, reduce sediment routing	Snake River Salmon Recovery Board
Restore riparian vegetation and employ practices that improve soil filtration, such as no-till.	ongoing	Instream flow	WA Conservation Commission
Utilize BMPs (e.g., livestock fencing, pasture rotation, off-site watering facilities for livestock) and practice vegetation management to promote growth and regeneration.	ongoing	Water quality, stream temperature	WA Conservation Commission
Restore riparian vegetation along salmonid-bearing tributaries.	0-3 years	Stream temperature, water quality, bank stabilization, habitat	WA Conservation Commission
Hangman (Latah) Creek Watershed			
Restore buffer of mature riparian vegetation to reduce heat loads on the stream	ongoing	stream temperature, water quality, streambank stabilization	Hangman Creek TMDL
Install livestock exclusion fencing and off-stream watering	ongoing	stream temperature, water quality, streambank stabilization	Hangman Creek TMDL

The Palouse Watershed covers the majority of Whitman County. Given that the Palouse River is a Shoreline of Statewide Significance and there is a large amount of Palouse River shoreline present in the County, it is useful to further prioritize where restoration actions may be of the most benefit. The accompanying Figures 2 and 3 provide a

qualitative "coarse scale" ranking of restoration priorities based on the relative condition of reaches within the Palouse River system. The color "red" indicates a low ranking for restoration, with "yellow" being moderate and "green" high. Reaches with both their riverine processes (i.e. channel migration, river is connected to the floodplain so that overbank flooding occurs on a regular basis) and reach functions (i.e. biological and physical functions) relatively intact are ranked higher than reaches where processes and functions are severely degraded (e.g. as a result of channelization). This ranking is an initial tool to assist in selecting restoration sites where the greatest biological lift can be achieved at a lower level of cost and effort.

Figure 2. Restoration Rankings for Mainstem of the Palouse River

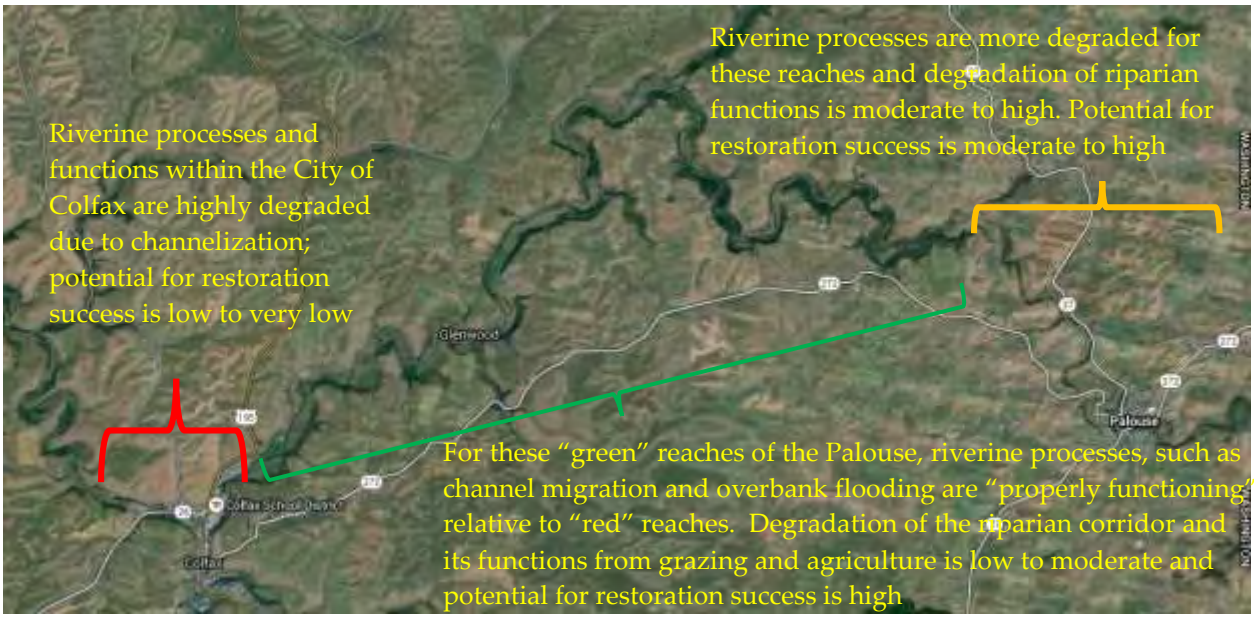
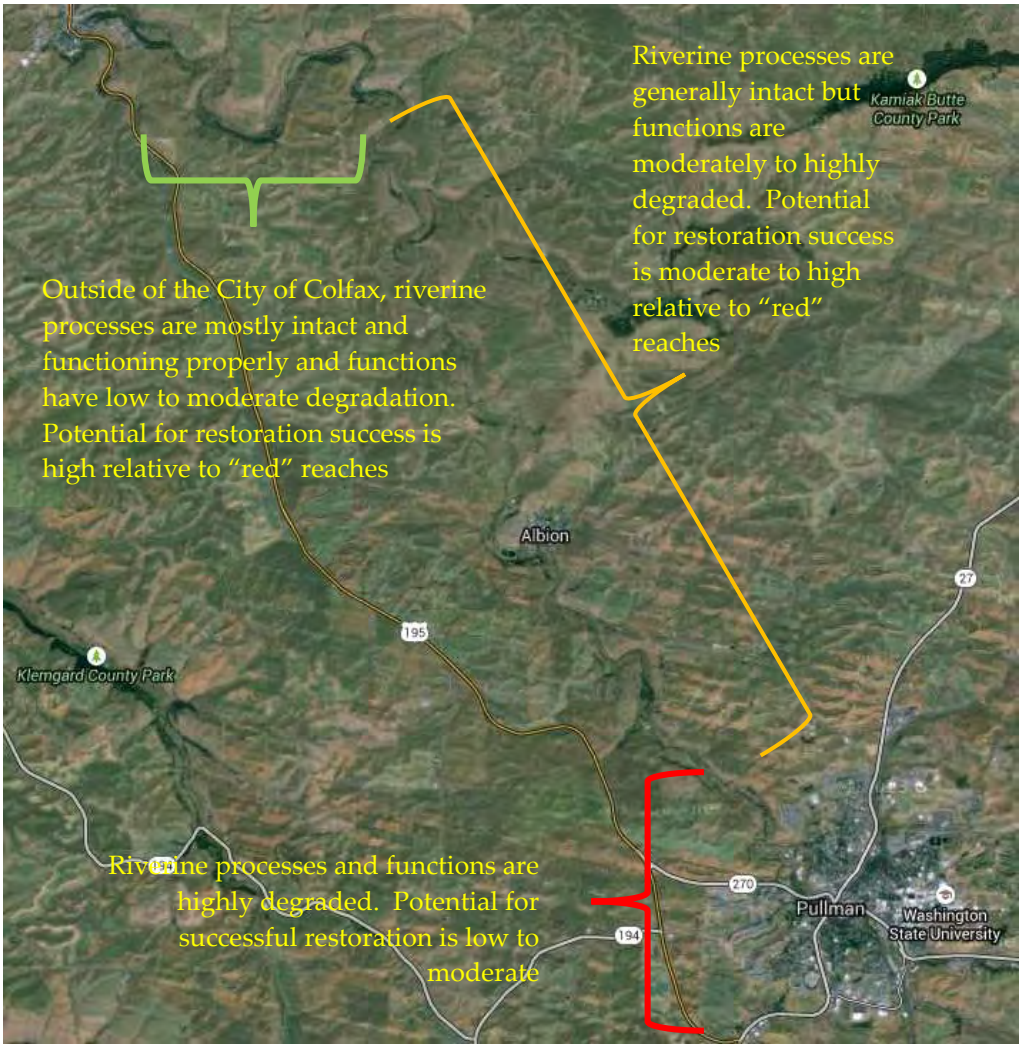


Figure 3. Restoration Ranking for South Fork of the Palouse River



5.2 City of Palouse

The City of Palouse's Comprehensive Plan (2014) identifies a number of strategies to improve environmental conditions within the City, including the following:

- Preserve natural areas through conservation easements, land acquisition and land swaps, designation of some areas as "critical wildlife habitat conservation areas," and using a Conservation Land Trust to acquire and manage natural areas.
- Planting native riparian vegetation along the Palouse River streambanks.
- In pursuit of improved water quality and to reduce flooding, "develop partnerships with upstream parties to improve upriver watershed management."

- Implement and enforce North Fork Palouse River Water Quality Improvement Plan
- Reduce soil erosion by requiring property owners to control storm run-off to a level that prevents soil erosion on their property.
- Encourage native plantings when possible.

5.3 City of Pullman

Policies identified in Pullman's Comprehensive Plan that would contribute significantly to improvements in shoreline ecological function in the City include the following:

Policy P4.1: Attempt to restore the South Fork of the Palouse River to a more natural appearance and function.

Policy P4.2: Protect riparian corridors along perennial streams from the adverse effects of development. Maintain a buffer of vegetation (preferably native vegetation) along all streams.

Policy P4.3: Whenever possible, establish greenways to link open space areas located in close proximity to one another.

Policy LU8.4: Protect and enhance the water quality, habitat value, and beauty of all perennial streams and rivers in the city. Cooperate with neighboring jurisdictions on regional water quality issues.

Policy LU13.1: Protect public access to the shorelines. Review of all private and public developments should consider and provide for public access as close to the water as possible, consistent with protection of environmental resources and water quality.

Policy LU13.2: Protect and enhance public views of the shoreline area from adjacent upland areas, consistent with the need to protect environmental resources (including vegetation).

Policy LU13.3: Preserve the natural character of the shoreline. Ensure that public and private development, including public access and recreational development, minimizes disturbance of environmental resources and shoreline ecosystems.

Policy LU13.4: Encourage the use of native plant materials in restoration of shoreline areas or landscaping development within the shoreline area. Protect areas of native vegetation.

Policy LU13.5: Encourage the design and use of naturally regenerating systems of erosion control and water quality treatment in shoreline areas.

Policy LU13.6: Ensure that all shoreline uses are located, designed, constructed, and maintained to minimize adverse impacts to water quality and fish and wildlife resources.

Policy LU13.7: Encourage development of trails along the city's streams. All trails should be designed to protect environmental resources and minimize adverse effects to water quality.

The Plan contains other goals and policies that support acquisition of habitat areas, setting back developments from the water's edge, and working with property owners to preserve and enhance riparian areas.

Stream restoration is also ongoing in the City through the Palouse-Clearwater Environmental Institute (PCEI). A long stretch of the South Fork adjacent to the City Playfields has been enhanced with native vegetation and banks stabilized with coir fabric "logs" to help minimize erosion. PCEI also organizes an annual spring stream cleanup activity for volunteers. At present, there are also 13 stream segments in the City, including South Fork Palouse River and tributary streams, that are sponsored by different organizations or families under the Adopt-A-Stream program.

5.4 Additional Projects and Programs to Achieve Local Restoration Goals

The Analysis Report (TWC and BERK 2014) provided an analysis of existing shoreline functions on a reach basis. Based on these results the Analysis Report identified a few restoration priorities recurring through most of the shoreline reaches. Broadly, these priorities include implementing best management practices for agricultural activities to provide control and improvement of water quality, and the reestablishment of vegetated riparian buffers. Potential restoration opportunities identified for some specific reaches are discussed in more detail below.

5.4.1 County

Palouse River Industry and Agriculture

Restoration recommendations for the Palouse River are well detailed in the TMDLs for both the Mainstem and North Fork, described above. Of the specific County reaches identified in the Analysis Report, Reach 8-County Industrial appears to be most degraded. This reach lies just outside of the northwest Colfax city limits and is impacted by industrial uses. Increasing the riparian native plant density and width of vegetated buffer would help protect the river from the adjacent upland uses. Other reaches with high potential for restoration include those most heavily impacted from agricultural practices, primarily Reach 5 –Agriculture (along the southwest border of the County from near the junction with Franklin and Adams Counties, through Hooper to where the river turns east) and Reach 10 -North Fork Palouse Agriculture (from the Idaho border to just west of the community of Glenwood). Working with private landowners to voluntarily implement agriculture BMPs and habitat improvement projects involving out-of-stream riparian restoration would be beneficial to these shorelines.

The riparian processes and functions for the Palouse River, Reach 8, have been significantly impacted by the industrial area west of Colfax

South Fork Palouse River Agriculture

A long stretch of the South Fork Palouse River from just outside of Pullman to where the river veers west toward Colfax (Reaches 2 and 3) have the most potential for restoration due to degradation from agricultural practices. Working with private landowners to voluntarily implement agriculture BMPs and habitat improvement projects involving out-of-stream riparian restoration would be beneficial to these shorelines. See restoration strategies in Section 6.0 for more information on sources of funding and assistance for accomplishing restoration of these riparian areas.

John Wayne Pioneer Trail

The John Wayne Pioneer Trail follows the former railway roadbed of the Chicago, Milwaukee, St. Paul & Pacific Railroad which runs through portions of the shoreline within all three Pine Creek reaches and portions of Rock Creek Reaches 3 (near Imbler Creek) and 4 (near the Cottonwood Creek confluence). The trail is maintained by Washington State Parks and has a management plan in place. Relevant issues identified and addressed in the plan include control of noxious weeds, preservation of natural plant and animal communities and general hydrology concerns such as flooding hazards and potential for water quality degradation (Washington State Parks and Recreation Commission 2000).

While restoration potential is limited in Rock Creek Reaches 3 and 4, as functions are already fairly unaltered, restoration potential exists for the Pine Creek reaches,

especially Reach 1 which is dominated by agriculture and Reach 2 which consists of wastewater treatment lagoons. Habitat improvement projects involving out-of-stream riparian restoration and increasing in-stream channel complexity and habitat features such as the addition of LWD would benefit these reaches. The trail provides a good opportunity for public involvement and education.

Klemgard County Park

Klemgard County Park is 59-acre recreational area located along Union Flat Creek (Reach 3) just northeast of Evans Road. Functions in this Reach are generally altered by agricultural uses and loss of riparian vegetation. The park provides a good opportunity for restoration activities which could include increasing the density and width of riparian buffer with native plant installation, as well as improving habitat connectivity between the stream channel and the forested area to the south.

Wawawai County Park

The 49-acre Wawawai County Park sits in the Snake River Canyon approximately three miles upstream from Lower Granite Dam within Reach 3. The Park provides wonderful restoration potential for providing opportunities for public involvement and education. The reach includes the shorelines along Wawawai Bay, which are generally well vegetated, however the shorelines immediately adjacent to the Snake River main channel are not. This includes fill and rip-rap for a railroad berm in the Snake River and roadway berm for SR 193; aquatic functions could be improved in these areas by working with the railroad to add scrub-shrub riparian vegetation to the base of the berm and with WSDOT to augment native plantings on the SR 193 berm.

Cottonwood Creek Wetlands

An extensive area mapped as potentially associated wetland (PAW) is included in shoreline jurisdiction, identified as Cottonwood Creek Reach 2. Most of the PAW is in agricultural use and some is developed. Opportunity exists to protect the existing wetland function and restore those areas impacted from agriculture. Cities and Towns

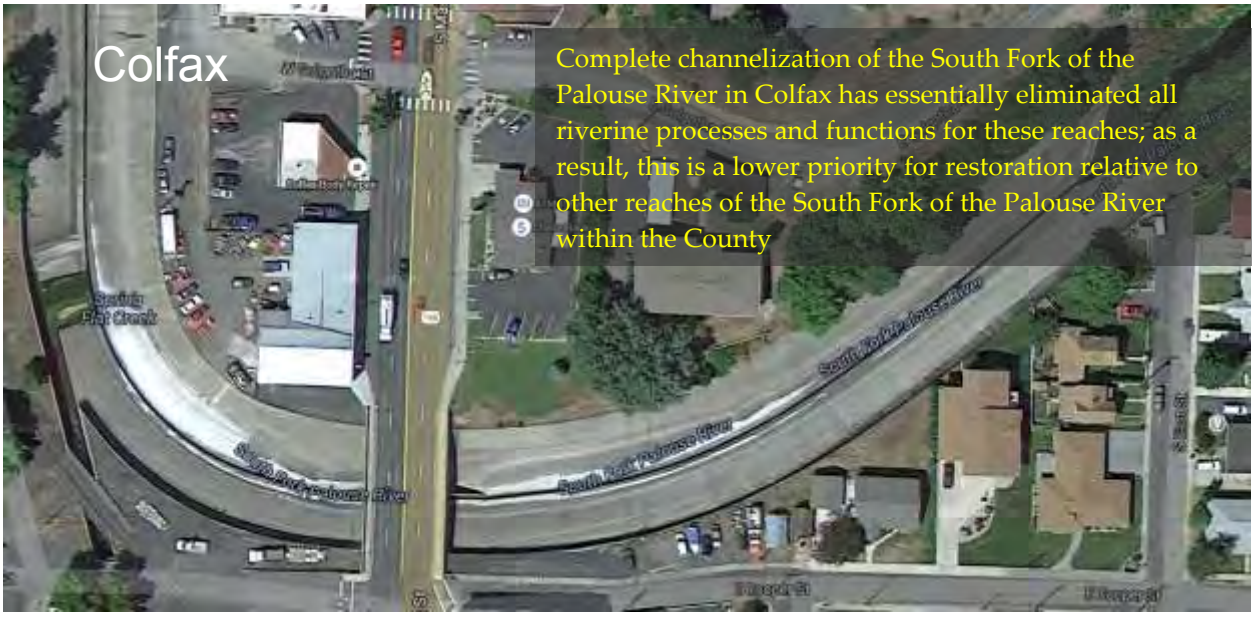
5.4.2 Albion

The South Fork of the Palouse River runs along the south edge of the City of Albion and is not significantly degraded by the urban development of Albion. The river's floodplain through these reaches appears to be in connection with the river and hard structures in the floodplain, such as buildings and pavement, are limited to one road crossing (South D Street) and adjacent roads such as East Front Street, Albion Parvin Road, and East Front Street. Riparian vegetation is mostly lacking, except for a narrow band of willows and other shrubs and small trees. As such, the City has an opportunity to protect these reaches through conservation easements and a program to restore riparian vegetation and attendant floodplain functions.

5.4.3 Colfax

In Colfax, Reaches 6, 7 and 8 of the South Fork Palouse River spanning from West Railroad Avenue to just after the river turns east, are entirely contained in a flume. Restoring the natural channel and riparian corridor through the City would yield great ecological benefit, including restoration of stream processes and subsequent improvement in stream biological functions. This restoration action has a low priority given the cost and effort relative to other restoration priorities (see Figure 3), and the

value of the flume for providing flood protection. Outside of the flume, Reaches 5, 9, 3, and 1 are also degraded. Restoration opportunities exist to reduce or replace shoreline armoring using bioengineering techniques, increase native riparian vegetation cover, and include educational materials such as interpretive nature and/or historical signs, as well as enhancing and maintaining the areas mapped as associated wetland. The city parks located in Reaches 3 and 5 provide good opportunities for such improvements.



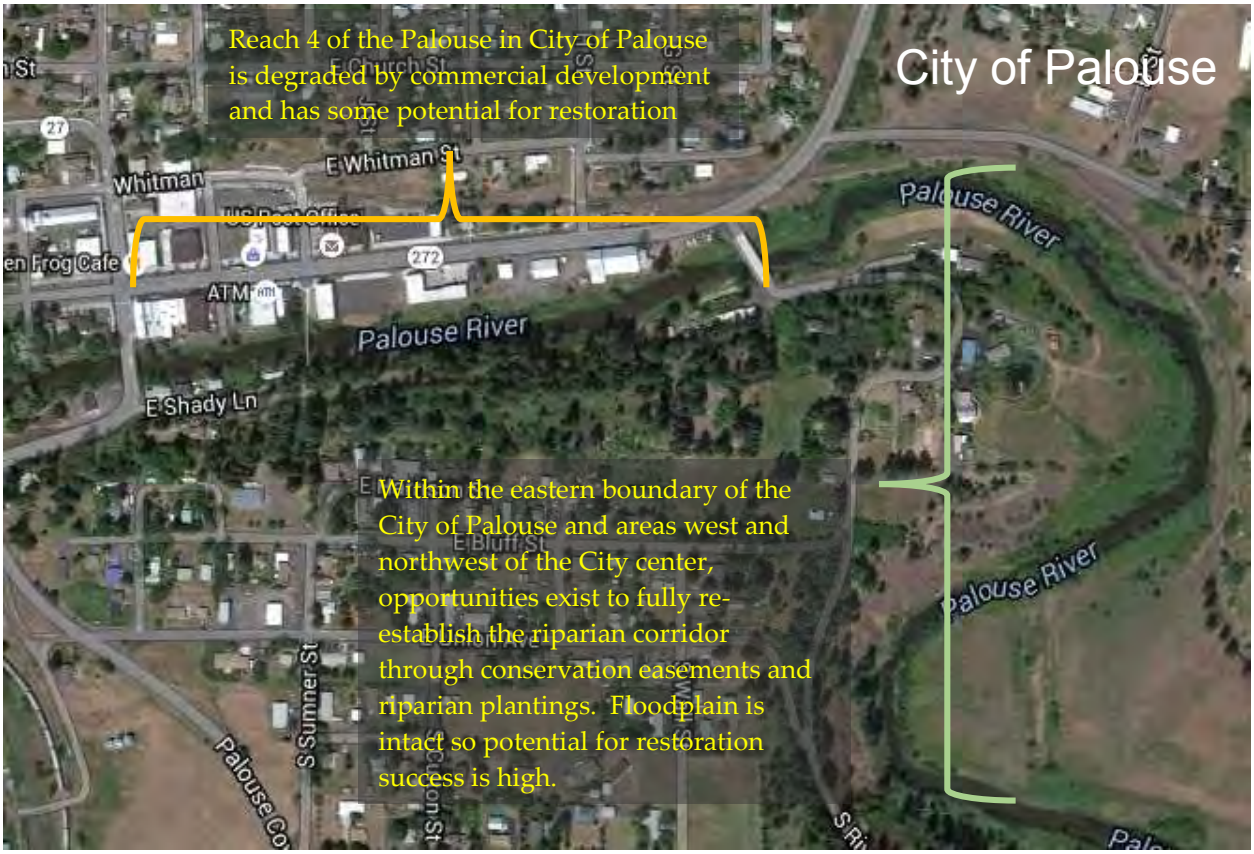
5.4.4 Malden

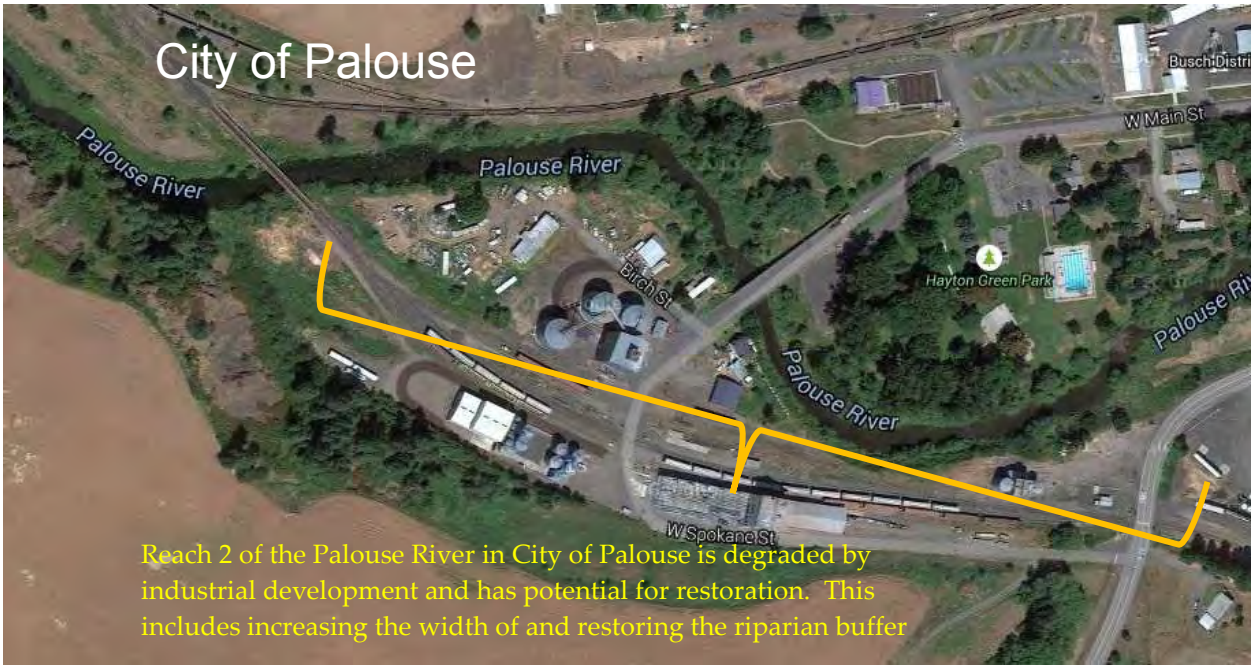
The John Wayne Pioneer Trail runs through the Pine Creek shoreline in Malden, offering great restoration potential, and providing opportunities for public involvement and education. The creek's floodplain through the Town appears to be connected with the creek, and hard structures in the floodplain, such as buildings and pavement, are limited. Riparian vegetation is mostly lacking, except for a narrow band of shrubs and some scattered pines. Much of the shoreline area on the north bank is already protected under a conservation easement.

5.4.5 Palouse

In the City of Palouse, Reach 2, which encompasses industrial development in the southwest portion of the City, and Reach 4, which encompasses the commercial development primarily on the north side of the Palouse River, south of Main street between Highway 27 and South River Road, are the most modified of the City reaches and have the most potential for restoration. Restoration opportunities include increasing the width and density of native riparian vegetation where feasible, including

educational materials such as interpretive nature and/or historical signs at public access or view points, and enhancing the areas mapped as associated wetland.





5.4.6 Pullman

The Commercial/Business District reach (Reach 2) of the South Fork Palouse River, running through downtown Pullman from approximately NW State Street to NE Spring Street, was identified as the most degraded reach in the City. Vegetation in the reach is mostly weedy herbaceous species, with a few shrubs and fewer trees. The Downtown Pullman River Walk (portion of the Bill Chipman Trail) runs through this reach and opportunities exist for public involvement and education. While the hydrologic and habitat functional potential of this reach is limited as the channel is confined between vertical concrete walls in sections, and is in close proximity to busy downtown development, there is potential for including vegetation function and visual appeal through riparian plantings.

The Palouse Conservation District and PCEI have done several volunteer restoration projects in the City of Pullman. In addition to annual stream cleanups, PCEI recently completed a planting project along a long stretch of the South Fork adjacent to the City Playfields in Reach 3. Maintenance of past restoration projects is important to ensure their continued success.

Opportunities also exist to partner with local Washington State University students and groups on enhancement projects in the City.

5.4.7 Rosalia

The Rosalia City Park in Reach 4 provides a good opportunity for restoration of the Pine Creek shoreline in the Town. Few shrubs and trees are present in this reach and there is little riparian vegetation separating the channel from surrounding uses. Extensive floodplain and floodway is present in this area. Restoration opportunities include protecting connectivity to the floodway, increasing in-stream habitat features, and planting riparian vegetation. There is also the opportunity for public involvement and education through the use of interpretive signs.

5.4.8 Tekoa

Hangman Creek runs through the west and southern portions of the City of Tekoa. The creek's floodplain is moderately degraded with light industrial and residential encroachment on the west side of the City. Reaches on the south end of the City are less degraded, but require restoration of the riparian corridor.