Appendix P
Umatilla Basin Report

1. Basin Description

Three major river systems make up the Umatilla Basin: the Umatilla River (100 miles in length), the Walla Walla River (61 miles in length) and Willow Creek (79 miles in length). All three rivers flow from their headwaters in the Blue Mountains to the Columbia River. The Umatilla River drainage and the northern portion of the Walla Walla River drainage are mostly in Umatilla County. The southern portion of the Walla Walla River drainage is in Washington State. The Willow Creek drainage is mostly in Morrow County, the confluence with the Columbia River is in Gilliam County. These rivers support bull trout, Redband trout, Pacific lamprey, fall and spring Chinook salmon, Coho salmon and steelhead.

The Umatilla Basin is characterized by irrigated agriculture at lower elevations, with grazing and timber lands at higher elevations. Elevations within the basin range from less than 300 feet at the Columbia River, to above 6,000 feet at the highest peaks of the Blue Mountains. Agricultural land, both dryland and irrigated, comprise the major portion of the basin. Crops include onions, corn, dry and green peas, and potatoes. The basin also contains many fruit orchards (cherry, apple, peach, pear) and vineyards. In 1990 DEQ declared the Lower Umatilla Basin a Groundwater Management Area because nitrate-nitrogen concentrations in many area groundwater samples exceed the drinking water standards for nitrate (10 mg/l). The groundwater area covers the lower portions of the Umatilla and Willow Creek drainages.

Table P-1: 2011 Land use and land cover for each subbasin in the Umatilla.

Subbasin	Watershed Area (km2)	% Urban/Roads	% Forest	% Cultivated	% Range/Forest Disturbance	%Other
Middle Columbia-Lake Wallula	2032.952	5.2	0.2	49.5	44.2	1.0
Umatilla	6541.531	3.4	15.9	33.5	46.7	0.5
Walla Walla	1242.591	3.1	30.6	41.8	24.0	0.4
Willow	2246.543	2.0	5.6	27.9	63.8	0.7

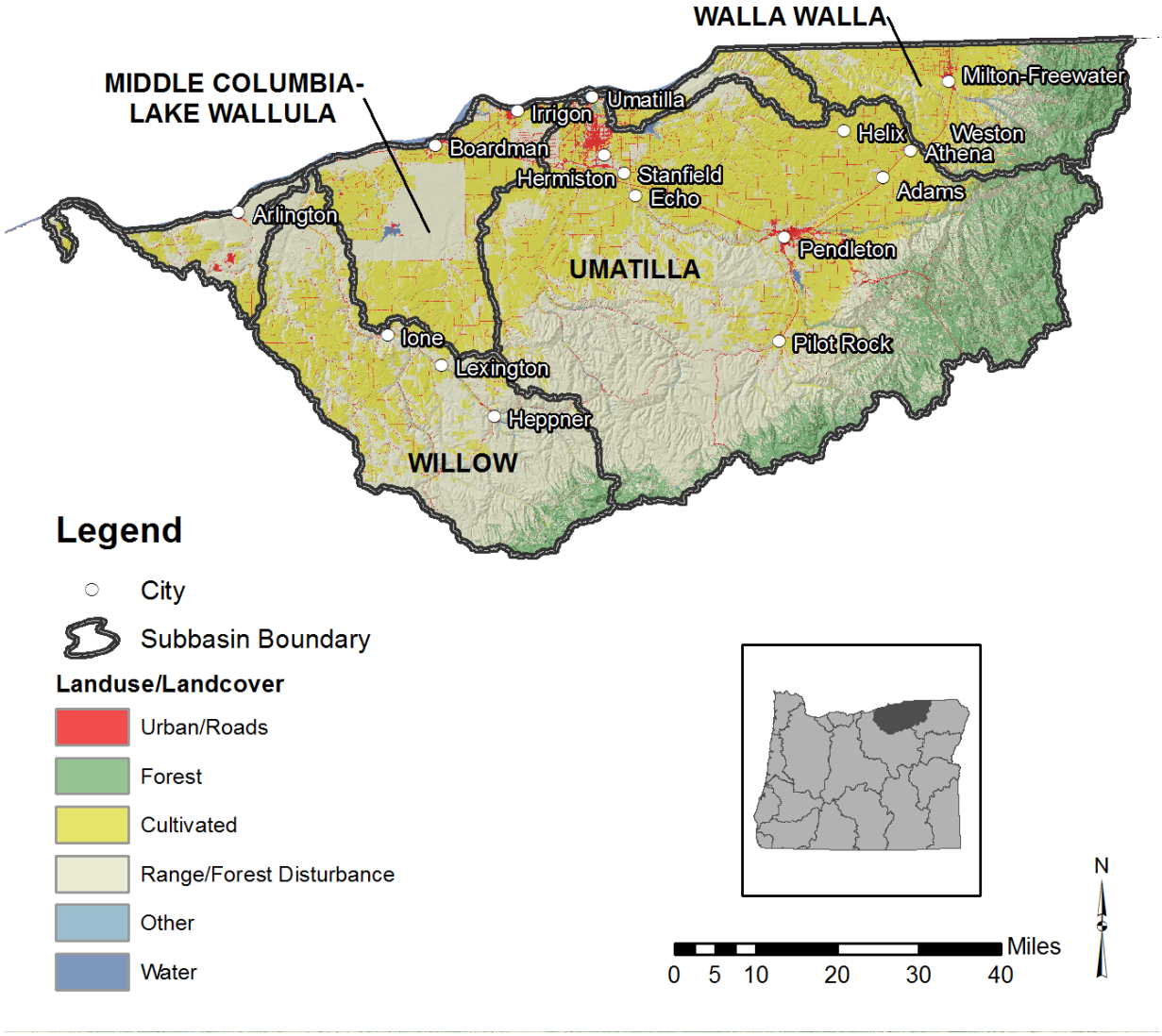

Figure P-1: Land use in the Umatilla administrative basin.

1.1 Basin Contacts

Table P-2: Oregon DEQ basin contact.

Administrative Area	DEQ Basin Coordinator
Umatilla Basin	Don Butcher: 541-278-4603: butcher.don@deq.state.or.us

2. Water Quality Impairments and TMDLs

2.1 Water Quality Impaired Stream Segments

Under Section 303(d) of the Clean Water Act, states, territories and authorized tribes must submit lists of impaired waters. Impaired waters are those that do not attain water quality standards or support all designated uses. The law requires that states establish priority rankings for waters on the lists and develop Total Maximum Daily Loads (TMDLs) for these waters. Table P-3 identifies the number of Umatilla Basin waterbody segments impaired by parameter from the 2012 Integrated Report and the number of segments with approved TMDLs. Sources: ODEQ, USEPA

Table P-3: Number of impaired stream segments with and without a TMDL as identified in Oregon's 2012 Integrated Report and Assessment database.

Parameter	Segments without a TMDL	Segments with a TMDL
Ammonia	0	3
Aquatic Weeds Or Algae	1	3
Arsenic	1	0
Biological Criteria	2	0
Chlorpyrifos	5	0
Copper	1	0
Dioxin (2,3,7,8-TCDD)	0	6*
Dissolved Oxygen	10	0
E. Coli	3	0
Fecal Coliform	0	4
Fish tissue, Mercury	2	0
Guthion	2	0
Iron	10	0
Lead	2	0
Mercury	3	0
Nitrates	1	2
Parathion	1	0
pH	1	10
Polychlorinated Biphenyls (PCBs)	1*	0
Sedimentation	1	17
Temperature	1	28
Total Dissolved Gas	0	3*
Total Phosphorus	1	0
Turbidity	0	1

* Identified impairment only in Columbia River.

2.2 Total Maximum Daily Load Watershed Plans

The federal Clean Water Act requires that water pollutant reduction plans, called Total Maximum Daily Loads (TMDLs), be developed for water bodies that are listed in Category 5 of the Integrated Report (303(d) List). TMDLs describe the maximum amount of pollutants that can enter the river or stream and still meet water quality standards.

TMDLs take into account the pollution from major sources including discharges from industry and sewage treatment facilities, runoff from farms, forests and urban areas, and natural sources. TMDLs include a margin of safety to account for uncertainty, and may include a reserve capacity that allows for future discharges to a river or stream. DEQ typically develops TMDLs on a watershed, subbasin, or basin level and occasionally at the reach level depending on the type and extent of impairments.

The Water Quality Management Plan (WQMP) is the framework for TMDL implementation that is issued by Oregon along with the TMDL (Oregon Administrative Rules 340-042-0040(l)). The TMDL and WQMP serve as a multi-sector plan and provides the blueprint for TMDL related implementation activities. Table P-4 lists the TMDLs that have been approved in the Umatilla Basin.

Table P-4: Approved TMDLs in the Umatilla Basin and the impairments addressed by those TMDLs.

TMDL Document Name	Impairments Addressed
Umatilla River Basin TMDL and WQMP	Ammonia, Aquatic Weeds, Bacteria (water contact recreation), Nitrate, pH, Sedimentation, Temperature, Turbidity
Walla Walla Subbasin Stream Temperature TMDL and WQMP	Temperature
Willow Creek Subbasin Temperature, pH and Bacteria TMDL and WQMP	Bacteria (water contact recreation), pH, Temperature

3. Implementation Highlights

3.1 Section 319 Grants

Federal Section 319(h) funds are provided annually through the EPA to states for the development and implementation of each state's Nonpoint Source Management Program. In Oregon a portion of 319 grant funding is "passed through" to support community or partner projects that address Oregon's nonpoint source program priorities. Generally, DEQ requires grantees to report annually on the progress made implementing their grant project. This section highlights those outputs and accomplishments reported to DEQ in 2019. Note this section does not identify or include projects proposed and awarded a grant in 2019. Outputs and accomplishments for those projects will be reported to DEQ in future years once they have been implemented. For a listing of projects proposed and awarded a grant in 2019 see Section 3.6.2 of the main report.

In 2019, there were four 319 projects active that reported project outputs and accomplishments to DEQ. Combined the projects have a total grant budget of $81,480. Table P-5 describes the projects and the reported outputs.

Table P-5: Project outputs reported in 2019 for Section 319 pass through grants.

Project Name	Grantee	Project Description	Reported Outputs
Salmon Safe Certification in Peas/Wheat Agronomic Crop Rotation	OSU Extension Service - Umatilla	The Recipient will provide technical support for the dissemination and use of Salmon-Safe protocols for green peas and wheat in the Umatilla Basin, continue implementation of the information and education program designed to encourage participation in the Salmon-Safe IPM, and track enrollment and participation in the Salmon-Safe IPM.	This project completed in July 2019. Much of this project's work was completed prior to 2019. In 2019, the growers participating in the Salmon Safe project were audited. All five participants maintained their certification. The remaining project funding was distributed to collaborators for the adoption of the Salmon Safe program. Additionally, the pea list was appended in 2019.
Heat Source Water Temperature Modeling, Part 2	Walla Walla Basin Watershed Foundation	This project is a continuation of an earlier 319 project. The proposed Heat Source modelling project on the South Fork and Mainstem Walla Walla River will provide an updated watershed restoration and planning tool for the Walla Walla Subbasin. The Heat Source Model's ability to model the effect of various BMPs, vegetation types (shade and height), and stream complexity can be used to weight different restoration scenarios in cost/location vs. benefit analysis. The updated model will also have the direct benefit of providing a custom-fit, quantitative planning tool and will ensure that stream temperature and the TMDL compliance goals remain centerpiece to overall restoration planning in the Basin. Results from the updated model will be directly compared to the results produced from the original model scenarios from 2002 which will provide insight to the impacts of implemented projects post TMDL implementation.	The second part of this project (the current iteration) was just getting started in 2019. There are no project outputs to report at this time.
Water Quality Education and Outreach	Walla Walla Basin	The Recipient has been very active in education and outreach programs and activities in the Subbasin. In	In 2019, the WWBWC hosted a clean-up, a Wildlife Habitat Field Day for 5th grade

Project Name	Grantee	Project Description	Reported Outputs
	Watershed Foundation	order to continue to improve water quality in surface and ground waters in the Walla Walla Subbasin, continued support of this education and outreach is needed. This project will help to promote a greater local awareness of surface and groundwater issues, function, and how protection and restoration efforts can aid in restoring healthy hydrological and ecological systems is needed. Project work complements both the TMDL implementation and the PSP efforts. Grant funds will be used to develop new and continue existing educational and technical outreach programs promoting public awareness of water quality issues and their solutions within the Basin. Specific education and outreach activities may include Annual Council Projects Tours, Environmental Stewardship Volunteer Events, a place-based Environmental Education program (Milton-Freewater Unified School District), and Salmon in the classroom (Weston McEwen High School). Many of these educational activities address human-related stream heating associated with flow diminution and channel manipulation, including loss of riparian vegetation, and associated loading of sediment, nitrate, ammonia, bacteria, pesticides, and others. Both surface and groundwater resources will be addressed, along with the interconnectedness of these two water systems. It is projected that Project activities will reach more than 600 school-age students and more than 100 adults each year in the Umatilla and Walla Walla Basins. Activities will focus primarily in the Milton-Freewater area, but will also be implemented in	students, water quality sampling and hands-on salmon learning and stream release, and two Watershed Field Days where students planted riparian trees, built fences, and repaired roads to learn about nonpoint source pollution.

Project Name	Grantee	Project Description	Reported Outputs
		also other locations within the Subbasin.	
Couse Creek Watershed Assessment	Walla Walla Basin Watershed Foundation	The Recipient will conduct a watershed hydrology assessment compiling available information on flow, water level(s), geology (as characterized by existing maps and well logs), geologic outcrop information (areas of visible bedrock), and other appropriate data. The Recipient will conduct instream habitat condition assessments/surveys on Couse Creek and appropriate tributary streams to identify reaches that have good instream components and identify potentials for protecting these areas. The Recipient will conduct upland condition surveys within the Couse Creek watershed to identify areas of possible sediment input using the Soil and Water Assessment Tool (SWAT to simulate the quality and quantity of surface and ground water and predict the environmental impact of land use, land management practices, and climate change. The Recipient will conduct a road condition/inventory for the Couse Creek Watershed using ArcGIS and the SWAT tool to model hillslope erosion. Road conditions and potential sediment delivery will be assessed using the Watershed Erosion Prediction Project model (WEPP:road) or similar process. The Recipient will conduct field surveys to document road conditions and verify GIS processes. The Recipient will investigate re-establishing floodplain connections either through restoration work or artificial means (e.g. managed aquifer recharge) where natural processes are not possible. The Recipient will compile a Draft Couse Creek Watershed Assessment and Action Plan Report for landowner, agency and partner review.	In 2019, water quality monitoring continued. WWBWC gathered historic flow and water level information, performed channel bed assessment, set up two continuous flow monitoring sites, and defined and surveyed the remaining habitat reaches.

3.2 Clean Water State Revolving Fund (CWSRF)

The Clean Water State Revolving Fund loan program provides below market rate loans to public agencies for the planning, design and construction of various projects that prevent or mitigate water pollution. Eligible agencies include federally recognized Indian tribal governments, cities, counties, sanitary districts, soil and water conservation districts, irrigation districts, various special districts and intergovernmental entities. DEQ partners with Oregon communities to implement projects that attain and maintain water quality standards, and are necessary to protect beneficial uses. This section highlights the ongoing projects and the outputs and accomplishments reported to DEQ in 2019.

In 2019 there were no nonpoint source related Clean Water State Revolving Fund projects with reported outputs in the Umatilla.

3.3 Source Water Protection Grants

The Oregon Health Authority regulates drinking water under state law and the Safe Drinking Water Act and works cooperatively with DEQ on source water protection efforts. Using the Drinking Water Revolving Loan Fund, OHA funds Source Water Protection Grants (up to $30,000 per public water system) for source water protection activities, monitoring, and planning in Drinking Water Source Areas. In addition, loans are available for improving drinking water treatment, source water protection activities, or land acquisition in source areas. Oregon's Infrastructure Finance Authority is responsible for administering these projects. The loan fund set-asides also fund five Drinking Water Protection positions at DEQ that provide technical assistance to public water systems and communities while they develop and implement strategies that reduce the risk within the delineated source water areas. This section highlights the ongoing projects and the outputs and accomplishments reported to DEQ in 2019.

In 2019 there were no nonpoint source related Drinking Water Source Protection program projects with reported outputs in the Umatilla.

3.4 Drinking Water Provider Partnership Grants

Oregon DEQ participates in the Drinking Water Providers Partnership (DWPP) with USDA Forest Service Region 6, EPA Region 10, the U.S. Bureau of Land Management OR/WA Office, the Washington Department of Health, Geos Institute and WildEarth Guardians. Together, these partners coordinate a competitive grant solicitation and award program for environmental conservation and restoration projects in municipal watersheds across the Northwest. The Drinking Water Providers Partnership made the first of the annual awards in 2016 and most projects have a focus on nonpoint sources of pollution. The goal of the Partnership and the funding is to develop and support local partnerships to restore and protect the health of watersheds which communities depend upon for drinking water while also benefiting aquatic and riparian ecosystems, including the native fish that inhabit them. This section highlights the ongoing projects and the outputs and accomplishments reported to the DWPP in 2019.

In 2019 there were no active Drinking Water Providers Partnership projects with reported outputs in the Umatilla.

3.5 OWEB Grant Funded Projects

The Oregon Watershed Enhancement Board (OWEB) is a state agency that provides grants to help Oregonians take care of local streams, rivers, wetlands, and natural areas. These grant projects often address nonpoint sources of pollution and are thus included in this report.

Based on the most recent data available in OWEB's Oregon Watershed Restoration Inventory (OWRI) database, there were seven OWEB funded projects completed in 2018 with a total cash and in-kind budget of $2,057,538. The tables below summarize reported outputs for different project activities in each Umatilla subbasin.

Learn more about OWEB grant programs at https://www.oregon.gov/OWEB/grants/Pages/grant-programs.aspx.

Table P-6: Summary of OWEB grant funded instream projects completed in 2018, the most recent year data is available in the OWEB OWRI database.

Subbasin	Engineered structures installed (Number of treatments)
Umatilla	15

Table P-7: Summary of OWEB grant funded instream projects completed in 2018, the most recent year data is available in the OWEB OWRI database.

Subbasin	Instream habitat: Large wood placement (Number of treatments)	Off-channel habitat created, protected, or reconnected (Feet)	Off-channel habitat created, protected, or reconnected (Number of treatments)
Umatilla	568	2776	4

Table P-8: Summary of OWEB grant funded riparian projects completed in 2018, the most recent year data is available in the OWEB OWRI database.

Subbasin	Riparian invasive plant control (Area treated)	Riparian invasive plant control (Stream sides treated)
Umatilla	32.7	2

Table P-9: Summary of OWEB grant funded upland projects completed in 2018, the most recent year data is available in the OWEB OWRI database.

Subbasin	Irrigation system improvement (Acre)	Irrigation system improvement (Feet)
Umatilla	189	1640
Willow	290	NA

Table P-10: Summary of OWEB grant funded upland projects completed in 2018, the most recent year data is available in the OWEB OWRI database.

Subbasin	Off-channel livestock or wildlife watering (Number of treatments)
Umatilla	4
Willow	2

Table P-11: Summary of OWEB grant funded instream projects completed in 2018, the most recent year data is available in the OWEB OWRI database.

Subbasin	Wetland creation (Area treated)	Wetland restoration (Area treated)	Wetland vegetation planting (Area treated)
Umatilla	0	2.9	2.9

3.6 TMDL Implementation Highlights

TMDL implementation actions taken by Designated Management Agencies (DMAs) or third parties are described in the table below. Most of these actions were summarized from annual reports submitted by DMAs to DEQ in calendar year 2019.

Table P-12: TMDL implementation activities reported in 2019 by Designated Management Agencies or third parties.

TMDL	DMA	Reported Actions
Willow Creek Subbasin TMDL	Umatilla National Forest	Began TMDL implementation planning.