Year 2023 Report on Activities to Implement *Washington State's Water Quality Plan to Control Nonpoint Source Pollution*

May 5, 2023

DEPARTMENT OF
ECOLOGY
State of Washington

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Purpose of Document

This Year 2022 Report on Activities to Implement Washington State's Water Quality Plan to Control Nonpoint Source Pollution is intended to meet the requirements of section 319 (h) (8) and (11) of the Federal Clean Water Act (CWA) (33 USC 1329). The report documents the activities and accomplishments of the State of Washington in achieving clean water, and the Department of Ecology's (Ecology) administration of the State's Nonpoint Source (NPS) Pollution Program. As described herein, Washington is making significant progress toward meeting the substantial on-the-ground and policy challenges presented by nonpoint water pollution.

Chapter 1: The Path Towards Clean Water

Nonpoint source (NPS) pollution in our waterways is the greatest water quality challenge facing Washington State today. Ecology's NPS strategy focuses on multiple implementation paths to achieve clean water. However, no matter the approach, we continually strive for greater regulatory clarity and a comprehensive strategy that uses all available tools to control and prevent nonpoint sources of pollution and achieve compliance with water quality standards. In 2022, we made significant progress towards our goal of preventing nonpoint pollution and improving water quality across Washington. Some of our bigger successes include:

- Completing an update to the Nonpoint Plan[1] and submitted it to EPA.
- Completed four chapters of the Voluntary Clean Water Guidance for Agriculture.[2]
- Presented options to the Forest Practices Board for updated buffers on Type N Waters.

Ecology's efforts to manage NPS pollution are underlain by a foundation of strategic policies intended to foster and guide water quality protection efforts. Accordingly, this report highlights some of the policy level advances in our continual effort to map out the nonpoint source regulatory landscape, and subsequently navigate toward a more effective statewide nonpoint source program.

Ecology's nonpoint strategy focuses on promoting the implementation of effective best management practices (BMPs) that support compliance with the water quality standards and prevent pollution discharge. The primary tools Ecology uses to facilitate and guide on the ground implementation are:

- Total Maximum Daily Loads (TMDLs) and associated implementation plans
- Advanced Restoration Projects (i.e., a watershed-based implementation efforts in advance of a TMDL)
- Straight to Implementation (STI) projects-a type of Advanced Restoration Project
- Ecology's Grant and Loan program and associated funding guidelines.

Additionally, when harmonizing social, financial, and technical resource conditions arise in a watershed, Ecology takes advantage of other opportunities to achieve on-the-ground implementation. The Clean Samish Initiative and the Whatcom County Clean Water Program are both examples where we are building on the momentum of concern over shellfish bed closures to promote clean water BMPs. Likewise, Ecology continues to support local Pollution Identification and Correction (PIC) programs. This work targets watersheds in the Puget Sound area where a local entity has taken a key role in identifying pollution concerns and addressing pathogen and nutrient pollution from a variety of nonpoint sources. These sources include on-site sewage systems, farm animals, pets, sewage from boats, and stormwater runoff.

[1] https://apps.ecology.wa.gov/publications/SummaryPages/2210025.html
[2] https://apps.ecology.wa.gov/publications/SummaryPages/2010008.html

This report also details the significant federal and state water quality protection investments made through our combined funding program. The grants and loans administered by this program are essential for advancing efforts to control NPS pollution. By facilitating the widespread implementation of effective BMPs, such as improved agricultural practices and riparian area restoration, this program is helping to create a paradigm shift in which NPS pollution control is viewed as important and customary by all contributing sectors.

Chapter 2: EPA's 2022 319 Grant Distribution

The federal fiscal year (FFY) 2022 Section 319 allocation of $3,233,000 was applied towards state fiscal year (SFY) 2023 and was again distributed among three major work plan elements within Ecology as in SFY2022: Ecology's Nonpoint Program, Direct Implementation Fund, and Water Quality Combined Funding Program.

2.1 Ecology's Water Quality's Nonpoint Program Support

Ecology funded 9.6 staff FTEs in SFY2023 that support the state's nonpoint program with policy development, technical assistance, and project implementation oversight.

Total EPA SFY 23 Allocation: $3,233,000

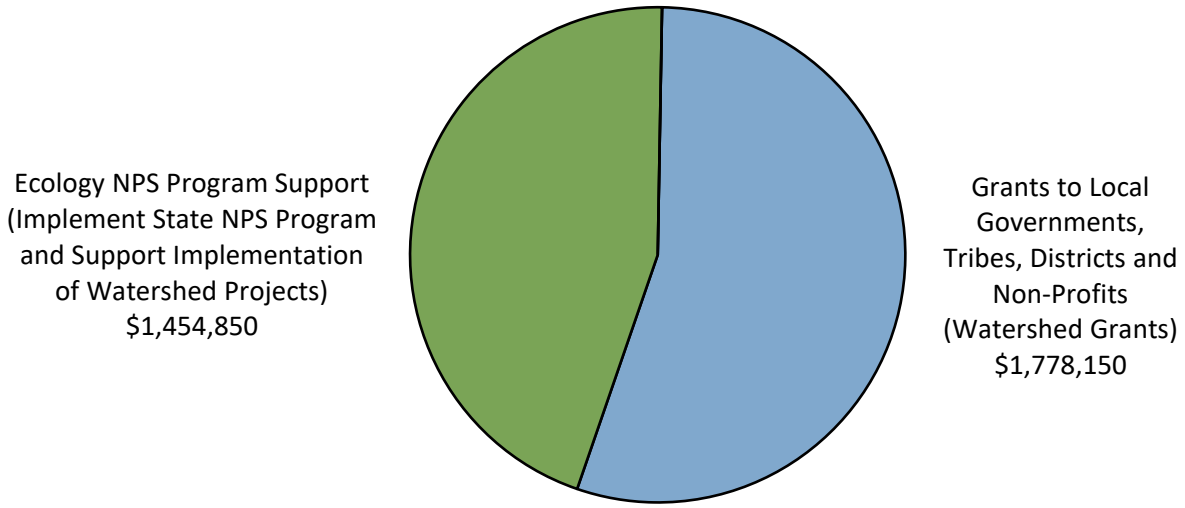

Figure 1. 319 Federal Allocations SFY 2023.

The above figure shows the distribution of the federal allocation in SFY2023 (FFY22). Ecology applied 40 percent state matching funds of $2,155,333 using State Clean Water Fund dollars. See section 2.3.1 for details.

2.1.1 SFY 2023 Nonpoint 319 Program Support Projects - 9.60 FTE @ ($1,454,850)

Table 1.Staff that are funded with 319 dollars.

319 Funded WQ Support Projects	FTEs	319 Cost
Nonpoint Policy and Plan Coordination	2.0	$327,269
Financial and Data Administration	0.90	$135,820
TMDL Nonpoint Education and Outreach	0.5	$81,883
TMDL Development and Implementation	1.10	$149,146
Nonpoint Technical Assistance and Compliance	2.30	$331,551
TMDL and BMP Effectiveness Monitoring	2.80	$429,181
Total	9.60	$1,454,850

1. **Nonpoint Policy and Plan Coordination (2.0 FTE)**

   Ecology is responsible for overseeing and coordinating overall nonpoint plan implementation activities and policy. Part of that role entails management, monitoring overall status, compiling progress reports, and reporting back to EPA, taking the lead in coordinating with other Ecology programs, facilitating inter-state agency work, implementing activities that have statewide applicability, and performing technical outreach about the plan with local governments, tribes, forest practices, and special purpose districts. In addition, Ecology is responsible for statewide nonpoint policy and planning.

   Estimated cost of this work plan component – **$327,269.**

2. **Financial Administration (0.90 FTE)**

   Staff of the Water Quality Program's Financial Management Section administer and manages all Section 319 grant funds and match funds passed through to local government entities, Indian tribes, and public not-for-profit groups. Staff ensures that funds are ranked and allocated to highest priority projects and are spent in a fiscally responsible manner. Staff also closely tracks projects tasks, results, and data from initiation to completion.

   Estimated cost of this work plan component – **$135,820.**

3. **TMDL Nonpoint Education and Outreach- (.50 FTE)**

   Ecology initiates an education and outreach effort as part of every TMDL. The purpose is to ensure that people understand why we are doing a TMDL, what their responsibilities are likely to be, and how they can participate. A successful public process makes TMDL implementation more likely and more effective.

   Estimated cost of this work plan component – **$81,883.**

4. **TMDL Development and Implementation (1.10 FTEs)**

   The primary job of a TMDL lead is managing the development of the TMDL and supporting documents for successful submission to and approval by EPA. This element includes knowledge of TMDL concepts and procedures, and the ability to work effectively with diverse groups within and outside Ecology. Other products required from this work element include development of an implementation strategy (IS) to go along with the TMDL, a summary of public involvement, and a water quality (detailed) implementation plan (WQIP). Once these procedures are documented, the TMDL lead coordinates and initiates implementation activities to meet the allocations set in the TMDL. In some cases, the TMDL lead also manages local implementation grants.

   Estimated cost of this work plan component – **$149.146.**

5. **Nonpoint Technical Assistance and Compliance (2.30 FTEs)**

   The purpose of this work plan element is to provide technical assistance to landowners, as well as federal, state, and local agencies, tribes, forests, and special purpose districts to ensure their activities, projects, and programs meet state water quality laws, regulations, and standards. Areas of technical assistance include forest practices, agricultural activities, riparian restoration, complaint management, inspections, and nonpoint source enforcement. This work plan element will apply in watersheds that implement nonpoint TMDLs, or in watersheds with plans that focus on protection of threatened waters or implementation activities to clean up waters.

   Estimated cost of this work plan component – **$331,551.**

6. **TMDL and Effectiveness Monitoring (2.80 FTEs)**

   This part of the plan designs and conducts monitoring studies to determine the effectiveness of nonpoint source management programs. Effectiveness monitoring, and ground water monitoring capture the success or failure of various voluntary and regulatory efforts. In addition, we will measure the effectiveness of specific implementation activities. Post TMDL monitoring is also conducted to verify that the pollutant controls result in the water body improving or meeting water quality standards. It tests the effectiveness of the implementation management programs/plans.

   Estimated cost of this work plan component – **$429,181.**

2.2 Direct Implementation Fund

The Direct Implementation Fund (DIF) is designed to assist Ecology's regional offices to directly address priority nonpoint problems. The DIF program uses unspent/de-obligated dollars from competitive projects, or other sources, to implement on-the-ground practices that will provide a direct and demonstrable water quality benefit by addressing an acute pollution problem at a specific site. Examples include planting riparian buffers, installing livestock exclusion fencing, and waste storage facilities to remove livestock (and associated pollution) from surface waters.

Projects may be proposed for DIF by an Ecology regional office at any time. The project will go through a review process and, if approved, be placed in a queue for when funds are available. If funds become available without projects in the queue, the Nonpoint Funding coordinator may notify all regional offices to solicit proposals. To qualify, the project must address:

1. Identified sources of nonpoint pollution causing the most significant harm to water quality.
2. Water bodies that are identified as not meeting water quality standards and/or have a strategic implementation plan (such as a completed TMDL, straight to implementation (STI) or other alternative watershed plan).
3. An actual ability to fix the problem (i.e., can implement the desired change and are ready to proceed and reach completion).
4. Criteria established in the DIF funding guidelines (updated SFY2022).

Ecology works closely with local partner organizations to facilitate implementation, leveraging both DIF and competitive grant programs. The 319 funded DIF projects in the table below began in 2022 and completed all deliverables and closed in 2023. No additional DIF projects were funded by Section 319 in 2022, however there were 4 state Centennial DIF projects.

2.2.1 Direct Implementation Fund (DIF) Projects

Table 2.List of all the Direct Implementation Funds

Agreement Number	Organization	Project Title	Watershed Plans	Project Short Description	Funding
WQOG-2021-MCFEG-00009	Mid-Columbia Fisheries Enhancement Group	Addressing Challenges in Riparian Vegetation Reestablishment	Upper Yakima River Basin Suspended Sediment, Turbidity, and Organochlorine Pesticide TMDL	This project addresses the challenges of riparian vegetation reestablishment through the developing of an outreach program that will provide learning and collaboration opportunities for restoration professionals in Washington State. In addition, it will also implement a demonstration project and provide additional support for stewardship of five completed projects.	250,000 (Section 319)
WQOG-2021-ChCoNR-00008	Chelan County natural Resources Dept	Nason Ridge Acquisition	Wenatchee River Watershed Temperature TMDL	This project will provide remaining funding needed to complete the purchase of the Nason Ridge property, 3,714 acres of forest, riparian, and floodplain habitat, which protects streams, wetlands, and floodplains of Nason Creek, Kahler Creek, and other minor tributaries. It will also include a culvert removal, road decommission, riparian restoration, and weed management at key locations to reduce sources of erosion, restore riparian and forest habitat, and restore normative stream function.	$440,800 (Centennial)
WQOG-2021-SkagCD-00006	Skagit Conservation District	Skagit Community Based Social Marketing (CBSM) Riparian Restoration Program	Lower Skagit River Tributaries Temperature TMDL	The RECIPIENT, in coordination with ECOLOGY, will subcontract to develop the Skagit Community Based Social Marketing (CBSM) Riparian Restoration Program (Program). The Program will include research to develop and deploy a behavior change campaign that addresses barriers to voluntary landowner participation in riparian restoration in Skagit County. The RECIPIENT	$500,000 (Centennial)

Agreement Number	Organization	Project Title	Watershed Plans	Project Short Description	Funding
				will develop the Implementation Plan for local conservation partners to support the Lower Skagit River Tributaries Temperature TMDL.	
WQOG-2021-SpoCD-00007	Spokane Conservation District	Hangman Creek Riparian Restoration and Conservation Program Pilot	Hangman (Latah) Creek Watershed FC, Temp, and Turbidity TMDL Water Quality Implementation Plan	This project will establish the Hangman Riparian Restoration and Conservation Program that builds upon existing conservation programs and producer-reported barriers to participation. This program will provide competitive rental rates with long-term contracts for agricultural riparian land taken out of production. This program is intended to be complimentary to existing available programs such as the Commodity Buffer Program and Farmed Smart Certification Program.	$1,000,000 (Centennial)
WQOG-2021-Vancou-00001	City of Vancouver	Burnt Bridge Creek Land Acquisition – Phase 1	Burnt Bridge Creek Watershed Fecal Coliform Bacteria, Temperature, Dissolved Oxygen, and pH Source Assessment Report	Burnt Bridge Creek flows through the city of Vancouver, WA and has been on the 303(d) list of impaired waterbodies for bacteria, pH, DO, and temperature violations of water quality standards since 2004. The RECIPIENT has identified 12 priority parcels (33.8 acres) to acquire for protection and restoration. This project will acquire at least one and up to three of those parcels, protecting between 4.07 and 8.23 acres of critical riparian area in a heavily urbanized setting.	$602,170 (Centennial)

2.3 Ecology's Integrated Grant and Loan Program

Ecology's Water Quality Combined Funding Program (WQC) administers four major funding sources that provide grants and low-interest loans for projects to protect and improve water quality in Washington State. Ecology acts in partnership with local governments, special purpose districts, tribes (Federally recognized), and nonprofits (Section 319 only), by providing financial and administrative support for their water quality efforts. Eligible project types include wastewater, stormwater, nonpoint, and on-site sewage systems (OSS). Ecology manages the four fund sources as one with common guidelines, one funding cycle, application form, and offer list.

The WQC offers funding packages to the highest ranked projects through an annual application process. Funding becomes available and agreement negotiations begin on July 1st every year. The full offer list is available as an interactive map, spreadsheet, and document on the WQC Funding Cycles webpage[3].

Funding packages may include dollars from:

- **Centennial Clean Water Fund** (Centennial) grants for all project types
- **Clean Water Act Section 319** (319) grants for nonpoint
- **Clean Water State Revolving Fund** (SRF) loans for wastewater, nonpoint, and OSS.
    - Low interest loans and the Green Project Reserves (GPR), with the possibility of forgivable principal normally boosts the number of SRF applications for nonpoint source projects.
- **Stormwater Financial Assistance Program** (SFAP) grants
    - The SFAP is designed to fund stormwater projects and activities that have been proven effective at reducing environmental degradation from stormwater and go above-and-beyond permit requirements. Stormwater facilities and a limited suite of stormwater activities may be funded through SFAP. SFAP-eligible facility projects must reduce stormwater pollution from existing development and will be reviewed by Ecology to ensure compliance with Ecology's design standards.

2.3.1 Nonpoint Grant and Loan Investments (SFY2023)

Nonpoint projects are evaluated and ranked based on feasibility criteria and water quality benefit, in support of the Washington State Nonpoint Plan and watershed plans. Nonpoint projects may receive a combination of grants and/or loans from 319, Centennial, and/or CWSRF as one funding package.

[3] https://ecology.wa.gov/About-us/Payments-contracts-grants/Grants-loans/Find-a-grant-or-loan/Water-Quality-Combined-Funding-Program/WQC-funding-cycle

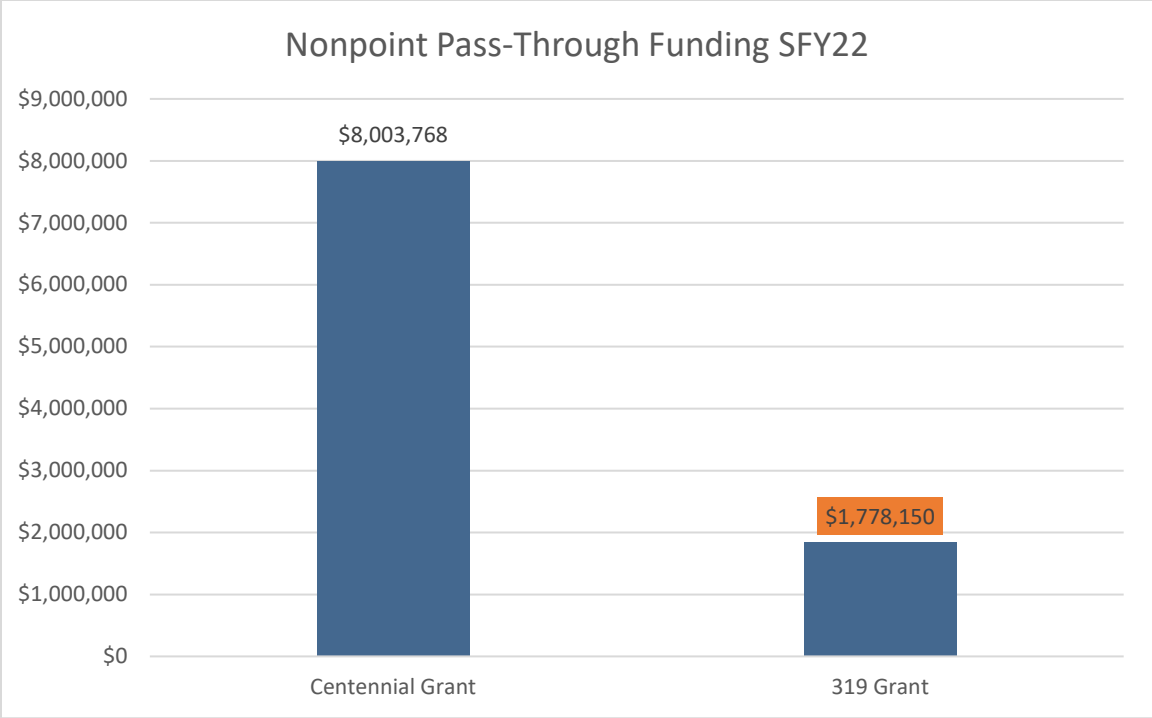

Figure 2. Nonpoint Funding distributed by grant type.

- $12,246,915 total Ecology investment in nonpoint projects in SFY 2023.
- 10 projects received 319 funding through the WQC program, and 1 received funding through the DIF program.
- 29 projects received state funding, in addition to the projects that were identified to satisfy the match requirement for EPA funds.

7 projects received matching state funding:

Table 3.compilation of all the state funding match amounts

Fund Source	Offer Amount	Number of Projects
Centennial	$8,003,768	29
Centennial Match	$2,265,875	7
Section 319	$1,977,272	10
CWSRF	$0.00	0
Grand Total	**$12,246,915**	**46**

319 Pass-through Funding Summary

- $1,778,150 allocated from EPA for pass-through.
- $1,977,272 awarded through the WQC program.

- $2,265,875 identified for state match in SFY 2023. The total two-year projected match amount is $4,923,574.50. These figures represent an over-match from the required annual match of $2,155,333 and biannually $4,310,666 but guarantees that Ecology will meet the end of grant required match amount.
- The $1,977,272 accounts to an over-obligation of $199,122. This facilitates early project development and implementation and is a safe investment because it falls within the historical sub project de-obligation amounts within five-year 319 Grants. The state Centennial fund provides backing to fulfill the over-obligation if de-obligations are less than anticipated.

Project descriptions follow on the next pages.

2.3.2 Nonpoint Source Watershed Projects Awarded Grants and Loans in SFY2023

The following projects were offered funding for the SFY2023 Water Quality Combined Funding Program funding cycle. Agreement negotiations began July 1st, 2022.

Table 4. Nonpoint Source Watershed Projects Awarded Grants and Loans in SFY2023.

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-BellPW-00074	Bellingham city of - Public Works Department	Padden Creek 24th-30th Streets Restoration Phase 2	Padden Creek Temperature TMDL, References Puget Sound Action Agenda	This project will improve the water quality and aquatic function of Padden Creek, a lowland urban stream in the City of Bellingham. This project will restore a total of approximately 2 acres of stream and riparian habitat through floodplain enhancement, riparian buffer enhancement, wetland restoration, large woody debris additions, and the creation of backwaters, side channels, pools, and riffles. This effort will reduce bacteria and temperature and increase dissolved oxygen in Padden Creek.	$0	$500,000	$0
WQC-2023-CascCD-00024	Cascadia Conservation District	Wenatchee Watershed Habitat Restoration and Water Quality Project	Wenatchee River Watershed Multiparameter TMDL	The Wenatchee Watershed Habitat Restoration and Water Quality Project will improve habitat and water quality by implementing habitat restoration projects, watershed education efforts and landowner assistance. This project will restore 5.37 acres of riparian buffer, monitor, and maintain 8 previously planted projects, plan 4 new riparian projects, provide water quality technical assistance to 30 landowners, certify 3 new farms as Salmon-Safe and continue	$0	$249,255	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
				watershed education and outreach efforts.			
WQC-2023-ChCoNR-00039	Chelan County - Natural Resource Department	Leavenworth Watersheds - Phased Water Quality Improvement Project	Wenatchee River Watershed Multiparameter TMDL	The Leavenworth Watersheds Phased Water Quality Improvement Project will allow for the continuation of a strategy to address a total of 27 temperature, DO, instream flow, pH and bacteria listings in Chumstick and Icicle Creeks. Building on four prior Water Quality grants (3 in the Chumstick and 1 in the Icicle), this project includes riparian planting on 1726 stream ft and 2.8 acres, monitoring and maintenance of new and past projects, and planning of the next phase of water quality restoration.	$0	$101,742	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-ChCoNR-00088	Chelan County - Natural Resource Department	Peshastin Watershed Alluvial Water Storage and Riparian Restoration	Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan, Wenatchee River Watershed Temperature TMDL	We propose a project to address water quality issues in the Peshastin Watershed, specifically Peshastin and Larsen Creeks. This project includes implementation of alluvial water storage treatments and riparian planting. Proposed monitoring and maintenance will measure project efficacy and allow for adaptive management. Additionally, we propose an effort to prioritize prospective water quality efforts within the Peshastin watershed and conduct outreach to landowners of high-priority parcels.	$0	$139,640	$0
WQC-2023-ClaPUD-00141	Clark Public Utility District	Schaefer Restoration Project	East Fork Lewis River TMDL Alternative, WA Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan 2010	Restore 20 acres of riparian habitat, previously pasture land, along 2,400 feet of a tributary to the East Fork Lewis river and treat 40 acres of invasive Japanese knotweed and other high priority aquatic invasive species within the East Fork Lewis River watershed. This project complements work which has already been implemented by Clark County further upstream in the wetland this stream feeds into and fits into a plan to restore the wetland and control knotweed at the watershed level.	$0	$249,652	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-ClCHHS-00131	Clallam County - Health and Human Services	Enhanced PIC in Clallam County's CWD Matriotti-Bell	Dungeness Bay Bacteria TMDL	The Sequim Bay-Dungeness Watershed Pollution Identification and Correction (PIC) project decreases bacteria entering marine waters from upland sources by investigating and correcting non-point pollution sources. Improved water quality decreases human health impacts and increases commercial/recreational shellfish harvests. This project helps restore access to "downgraded" shellfish growing areas in the Bay. This project will focus on Matriotti and Bell Creeks in the MRA.	$0	$200,468	$0
WQC-2023-Edmond-00101	Edmonds city of	7313 Lake Ballinger Way Floodplain Purchase & Structure Removal	Greater Lake Ballinger/McAleer Creek Watershed Study Strategic Action Plan	The project proposes to purchase an existing single family residential property located within the Lake Ballinger flood plain and which is subject to seasonal flooding. The City proposes to remove the home and any pollution generating surfaces from the site, restoring the natural floodplain area. The intent is for the purchase and demolition to be followed by a future project to split appropriate flows from the City storm system and provide water quality treatment to the maximum extent feasible.	$0	$500,000	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-FoCrCD-00058	Foster Creek Conservation District	Foster Watershed Restoration to Improve Water Quality	Watershed Plan for Moses Coulee and Foster Creek	In the Foster Creek Watershed, Foster Creek Conservation District (FCCD) will address 303(d) listings for temperature, pH, and dissolved oxygen through collaborative planning with partner organizations. In this new stage of this program, we will implement stream restoration projects, maintain previous project sites, continue monitoring, and provide educational programs to the community. We will also develop a watershed plan for WRIA 50-Foster Creek to guide future efforts.	$0	$250,000	$0
WQC-2023-FoCrCD-00059	Foster Creek Conservation District	Foster Watershed Soil health and Water Quality Initiative	Watershed Plan for Moses Coulee and Foster Creek	In the Foster Watershed, Foster Creek Conservation District (FCCD) will address 303(d) listings for temperature, pH, and dissolved oxygen by updating the watershed plan to prioritize pervasive erosional inputs from surrounding agriculture lands via mapping and stakeholder engagement. This project will also promote conservation through education and outreach, continue the direct seed cost share program and advance their existing water quality and soil health monitoring data collection programs.	$0	$250,000	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-GCCD-00056	Grant County Conservation District	Moses Lake Shoreline Restoration and Nutrient Reduction	2003- Moses Lake TMDL Groundwater Study	The Grant County Conservation District (GCCD) is proposing to address non-point sources of nutrients, especially phosphorus, entering Moses Lake through shoreline land uses and practices. This project will develop and implement a shoreline nutrient assessment for shoreline property owners, develop a public demonstration for the community, conduct education and outreach, and continue the USGS Adrian Sink groundwater study.	$0	$187,484	$0
WQC-2023-JeCoPH-00032	Jefferson County Public Health	Chimacum-Port Hadlock Pollution Identification and Correction Project	Jefferson County Climate Action Plan	Jefferson County Public Health (JCPH) will implement a Pollution Identification and Correction (PIC) project for the Chimacum and Port Hadlock areas to protect water quality from threats of nonpoint source pollution. JCPH will monitor water quality for bacteria to identify areas of concern, followed by property research, corrective actions, and outreach to resolve pollution sources. The project will protect human health, ensure shellfish beds remain open and protect water quality.	$0	$305,744	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-KCWLRD-00026	King County - Water and Land Resources Division	Horsehead Bend Natural Area Revegetation	Green/Duwamish and Central Puget Sound Watershed Salmon Habitat Plan 2020 Update (WRIA 9), Green River Temperature Watershed TMDL	King County will revegetate 8.5 acres of riparian shoreline along the Green/Duwamish River at Horsehead Bend Natural Area to address high summer water temperatures and to improve fish and wildlife habitat. This project site was identified as having a critical need for tree shade in the Muckleshoot Indian Tribe's riparian sun/shade maps. Planting this site will help implement recommendations from Ecology's 2011 Green River Temperature Total Maximum Daily Load (TMDL) report.	$0	$135,300	$0
WQC-2023-KCWLRD-00090	King County - Water and Land Resources Division	Flaming Geyser State Park Riparian Revegetation	Green/Duwamish and Central Puget Sound Watershed Salmon Habitat Plan (WRIA 9), Green River Temperature Watershed TMDL	A 2016 water quality study showed that the Green River increases temperature by 2-3 degrees Celsius between RM 44 and 40.5 in the summer; it flows through Flaming Geyser State Park between RM 44 and 41. The riparian zone through the park was identified by the Muckleshoot Indian Tribe as having a critical need of shade; most of the park's riparian zones lack trees. King County proposes to revegetate 14 ac. along 0.8 mi. of Green R. shoreline in the State Park (phase 2 of a multi-year effort).	$0	$450,000	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-KooCom-00055	Kooskooskie Commons	Water Quality Improvements on Yellowhawk Creek	Walla Walla Temperature TMDL, Walla Walla Watershed Multi-perimeter TMDL	The Applicant will implement a riparian restoration program along Yellowhawk Creek and the Walla Walla River to improve temperature and fecal coliform impairments due to legacy agricultural practices. The organization will install riparian buffers, monitor water quality, perform public outreach, and explore land trust easements for long-term protection of riparian areas and water trust agreements to protect flows and cold-water inputs to the stream.	$0	$0	$238,415
WQC-2023-LCEP-00164	Lower Columbia Estuary Partnership	Burnt Bridge Creek Water Quality, Education, and Restoration Project	Lower Columbia Fish Recovery Board Salmon Recovery Plan (not mentioned in application) Burnt Bridge Creek FC, Temp, DO, and pH Source Assessment Report Lower Burnt Bridge Creek Stormwater Needs Assessment	The project will establish a riparian forest along 3-acres of Burnt Bridge Creek (BBC), provide stormwater/clean water education to 22 teachers and 500 students; engage students, parents and 300 volunteers in tree plantings; and develop restoration alternatives and preliminary designs for the 45-acre lower BBC floodplain. Work will implement actions from the BBC Source Assessment Report. Preliminary designs will result in future floodplain restoration with significant water quality benefits.	$0	$0	$103,591

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-LoCFEG-00134	Lower Columbia Fish Enhancement Group	SF TOUTLE LOWER BROWNELL RIPARIAN RESTORATION	WA Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan	This project will improve water temperature conditions for cold water species in a category 5 listed (listing 72849) reach of the SF Toutle River. The Lower Columbia Fish Enhancement Group is working on a watershed-scale restoration effort on the SFT with projects spanning from the mouth to the base of Mount Saint Helens. This proposal increases the effectiveness of the riparian component of a funded SRFB project (# 21-1061) that will complete instream, floodplain, and riparian work.	$0	$0	$50,886
WQC-2023-MCFEG-00116	Mid-Columbia Fisheries Enhancement Group	Upper Yakima River Riparian Reforestation	Upper Yakima River Basin Suspended Sediment, Turbidity and Organochlorine Pesticide TMDL. Also references not yet released Upper Yakima Mainstem Temperature TMDL or TMDL-Alternative, unable to review.	This project will reduce water temperature and suspended sediment in Sorenson Creek and the Upper Yakima River through riparian restoration and project stewardship on 3400 stream feet at three sites. Funds will also reduce turbidity in Sorenson Creek through development of a future water quality improvement project. Outreach will increase awareness while increasing volunteer stewardship at 5 large-scale riparian restoration sites on 7,900 stream feet (3 sites above, and 2 additional sites).	$0	$0	$339,085

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-MCFEG-00117	Mid-Columbia Fisheries Enhancement Group	Lower Cowiche Creek Floodplain and Aquatic Restoration	Mid Yakima Basin Bacteria TMDL	This project will improve water quality and work towards addressing temperature, nutrient and bacteria loading in Cowiche Creek, which is listed on the Washington State's 303(d) list for these impairments. The project removes 870 feet of an old railroad berm to allow the establishment of a native riparian buffer to increase shading, buffer the stream, and increase floodplain function and connectivity. The project will also install pools to improve fish habitat and add thermal stratification.	$0	$0	$365,332
WQC-2023-NoYaCD-00071	North Yakima Conservation District	Trout Meadows Long Range Implementation Project	Upper Naches Watershed Temperature TMDL	The Trout Meadows Long Range Implementation Project addresses a 303(d) stream temperature listing in the Naches River by implementing riparian vegetation recovery actions. This project will establish 5 acres of floodplain with riparian vegetation and expand the establishment of 75-foot buffers along 9,500 feet of the Naches River mainstem and side channels. This project restores additional floodplain acreage from Task 2 Trout Meadows Riparian Establishment in WQC-2020-NoYaCD-00003.	$0	$229,510	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-OkanCD-00044	Okanogan Conservation District	Antoine Creek Water Quality Improvements	Lower Okanogan River Basin DDT and PCBs Total Maximum Daily Load, Okanogan Watershed Plan and 2020 Addendum for the Okanogan River Basin	Okanogan CD and partners will implement water quality improvement projects, conduct outreach, and plan additional BMPs on Antoine Creek, in Okanogan County, Washington. Two miles of Antoine Creek will be protected from livestock with exclusion fencing. Five acres of riparian planting will be installed on barren streambanks. 13 acres of weed control and reseeding will protect slopes from soil erosion into the creek. Antoine Creek is important habitat for Upper Columbia steelhead.	$0	$250,000	$0
WQC-2023-OkHiAl-00185	Okanogan Highlands Alliance	Triple Creek Water Quality Restoration Project, Phase 3	Kettle River Watershed Plan	The Triple Creek Project uses long-range planning and adaptive management to maximize the interplay of geomorphic changes and biological changes, improving water quality and restoring a functional wetland habitat. Aggrading the stream and increasing its sinuosity will recharge the floodplain, enabling positive biofeedback and ecosystem services. Streambank plantings will shade and cool surface water. This project galvanizes lessons learned with outreach activities to the community.	$0	$0	$136,388

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-PaloCD-00005	Palouse Conservation District	Operation Residue: (Under)cover Crops & Direct Seeding on the Palouse	North Fork Palouse River Bacteria TMDL (Approved) Palouse River (North Fork) Watershed DO and pH TMDL (Approved) Palouse River Watershed Bacteria TMDL (Approved) Palouse River Watershed Temperature TMDL (Approved) Palouse River Watershed Toxics TMDL (Approved) South Fork Palouse River Watershed Bacteria TMDL (Approved)	Palouse Conservation District (PCD) will lead implementation of one stream mile of riparian forest buffer and 6,000 acres of direct seeding to improve water quality in Whitman County streams. A cover crop demonstration project will assist producers in improving soil health on their farms. Soil health assessment of direct seed and cover crop projects will demonstrate project effectiveness, and outreach and education programs will lead to further community investment in water quality improvements.	$0	$443,037	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-PaloCD-00009	Palouse Conservation District	Partnership to Restore Riparian Areas in the Lower Fourmile Creek Watershed	Palouse River Watershed Temperature TMDL	Riparian buffers improve water quality and ecological functions of streams. This project will restore 30 acres of riparian areas (23,000 streambank feet) in the lower Fourmile Creek watershed, including installing up to 600 feet of streambank protection and 10 to 12 beaver dam analogues, providing technical assistance, assessing revegetation methods, installing interpretive signs, and developing place-based curriculum on riparian restoration and conservation agriculture.	$0	$496,156	$0
WQC-2023-PaRoCD-00011	Palouse Rock Lake Conservation District	One Pass at a Time-Conservation of Pine Creek Watershed	Palouse River Watershed Temperature TMDL	Pine Creek fails state water quality standards by multiple parameters. This proposal will address these failures and improve water quality by 1) Implementing 6750 acres of conservation tillage practices in the Pine Creek HUC-10 watershed through cost-sharing to reduce erosion and nonpoint source pollution 2) Implementing 1 mile of riparian enhancement in the Pine Creek HUC-10 3) demonstrate cover cropping as a viable chemical fallow alternative and 4) conduct local outreach and education.	$0	$368,367	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-PaRoCD-00018	Palouse Rock Lake Conservation District	Improving Water Quality on Rebel Flat Creek	Palouse River Watershed Temperature TMDL	Concerns regarding water quality and soil erosion on the Palouse create a high demand for best management practices aimed to reduce nonpoint source pollutants. This project will improve water quality and the culture of conservation by implementing 9,990 acres of conservation tillage, restoring, and maintaining two miles of riparian habitat, excluding livestock from stream access, creating cover crop demonstrations, and providing various education and outreach opportunities.	$0	$416,601	$0
WQC-2023-PeOrCD-00156	Pend Oreille Conservation District	Sandy Shores/Sunnyside Bank Stabilization on the Pend Oreille River	Pend Oreille River Watershed Temperature TMDL	The project will stabilize up to 1000 feet of streambank along the Pend Oreille River using engineered site plans to re-slope the bank, install large woody debris, and plant vegetation. This project will directly address the TMDL for temperature on the river, improve fish habitat and overall water quality. Additionally, it will fund a permanent, locally stocked, native riparian nursery and will help to implement a monitoring program for previous and current bank stabilization projects.	$0	$328,226	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-PiCoPW-00184	Pierce County - Public Works and Utility Department	Pierce County Septic Repair Program	Clarks Creek Watershed Bacteria TMDL	The RECIPIENT will continue and expand Pierce County's financial assistance program for homeowners to repair or replace failing on-site sewage systems or, where available, connect to sewer. The program priorities are to resolve sources of sewage that pose a health or water quality risk to shellfish growing areas, swimming beaches, 303(d) listed waterbodies, Puget Sound, stormwater facilities, or other potential surface water threats.	$0	$180,000	$0
WQC-2023-SFEG-00162	Skagit Fisheries Enhancement Group	Little Carey's Stream and Wetland Restoration	Lower Skagit River Tributaries Temperature TMDL	SFEG is working with Forterra and the Skagit Conservation District to restore and protect a 20-acre wetland and buffer along 1500 feet of Little Carey's Creek in Hamilton, WA. The property was used for agriculture, and a historic forest/shrub-scrub wetland was cleared, and the stream was channelized. The project will replant the wetland and buffer with native trees and shrubs and restore the stream channel to its former path through a forest area. We will also improve fish passage downstream.	$0	$0	$250,000

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-SkagCD-00190	Skagit Conservation District	Lower Skagit Riparian Restoration	Lower Skagit River Tributaries Temperature TMDL	The RECIPIENT in partnership with the Skagit Fisheries Enhancement Group will address water quality impairments on four sites in the Lower Skagit tributaries, including: temperature, bacteria, and dissolved oxygen, through expansion and maintenance of riparian buffers. The Skagit Fisheries Enhancement Group will implement the project under the direction of the RECIPIENT, including the management of staff and community volunteers to establish 6,190 native trees and shrubs.	$0	$220,096	$0
WQC-2023-SkCoPW-00001	Skagit County - Public Works Department	Barrel Springs Restoration Project	Impacts of Small Dams on Stream Temperature	A privately owned, failing, 13-ft tall dam on Barrel Springs that impacts water quality by impeding and heating critical summer streamflow to Dry Creek and temperature-listed Friday Creek will be removed. Three undersized culverts, two which are perched and failing, will be removed from Barrel Springs and Dry Creek. This, combined with channel restoration, will address an active water quality impairment, and eliminate ongoing erosion, while restoring habitat for ESA-listed species.	$0	$460,852	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-SnCoCN-00093	Snohomish County Conservation Natural Resources Department	Jim Creek Restoration	Stillaguamish Temperature TMDL, Stillaguamish Chinook Recovery Plan	The Jim Creek Restoration project will be implemented in a stream reach supported by cold tributary discharge described in previous Ecology-funded assessments. The project will construct wood structures, create shade, complex edge habitat, and plant native riparian trees & shrubs to improve rearing and refuge habitat, for ESA-listed salmonids. This project integrates Watershed Characterization and field-based factors (flow/temperature) affecting a 303D-listed stream reach immediately downstream.	$0	$500,000	$0
WQC-2023-SnohCD-00008	Snohomish Conservation District	Re-Tree Woods Creek Phase II	Snohomish River Basin Salmon Conservation Plan, Snohomish River Tributaries Bacteria TMDL, Puget Sound Action Agenda mentioned	The Snohomish Conservation District (SCD) will build off its original Re-tree Woods Creek campaign from 2013 by working with private landowners living along high priority reaches of Woods Creek to build a sense of stewardship for the watershed through a large-scale re-forestation initiative. Six new acres of streamside forest will be planted to address high summer water temperatures for juvenile salmon. Additionally, SCD will continue to maintain plantings installed from a previous grant round.	$0	$152,245	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-SnohCD-00010	Snohomish Conservation District	South Fork Stillaguamish Floodplain Restoration	Stillaguamish River Watershed Multiparameter TMDL, Stillaguamish River Watershed Temperature TMDL, Stillaguamish Watershed Chinook Recovery Plan	Snohomish Conservation District (District) proposes to address documented impaired water temperatures and dissolved oxygen levels on the South Fork Stillaguamish River that threaten ESA-listed Chinook salmon, other salmonids, and aquatic life through invasive species control and riparian reforestation. The District will actively control invasives and plant 7000 native trees and shrubs on 8.1 acres of floodplain forest and associated wetlands.	$0	$167,206	$0
WQC-2023-SoSaSo-00033	Sound Salmon Solutions	Segelsen Stillaguamish Riparian Restoration Phase II	Stillaguamish River Watershed Temperature TMD, Stillaguamish River Watershed Multiparameter TMDL	Sound Salmon Solutions (SSS) will restore 9.52 acres of riparian habitat on 1,600 feet of the North Fork Stillaguamish River by controlling invasive vegetation and planting native trees and shrubs on a 300-foot wide habitat buffer to improve water quality.	$0	$0	$136,181

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-SpoCoD-00165	Spokane Conservation District	Spokane Riparian Establishment Project	Little Spokane River Watershed Multiparameter TMDL, Hangman Creek Watershed Multiparameter TMDL, Little Spokane River DO and pH TMDL,	The Spokane County region is a hotbed of activity regarding stream buffers. From the Conservation District's Commodity Buffer Program to the FSA/NRCS Continuous Conservation Reserve Program, many miles of buffers are being installed. This project aims to focus on three main projects for implementation. Together, they cover approximately 4,800' of stream banks on Cove Creek, California Creek, and Deadman Creek. The project will require irrigation plans, riparian planting, and planting crews.	$0	$212,625	$0
WQC-2023-SpRiKe-00137	Spokane Riverkeeper	Rock and Hangman Creeks Riparian Restoration and Water Quality Improvement	Hangman (Latah) Creek Watershed Fecal Coliform Bacteria, Temperature, and Turbidity TMDL	The Spokane Riverkeeper has begun to address water quality concerns along Hangman Creek and its tributaries, such as Rock Creek, in recent years. The Spokane Riverkeeeper will continue to improve nonpoint pollution issues throughout the watershed by installing 50 acres of riparian plantings, establishing three water quality locations, 10 water temperature loggers, and providing education and outreach programs to maximize restoration efforts along this watershed, leveraging NRCS funding.	$0	$0	$192,669

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-SSIT-00152	Sauk-Suiattle Indian Tribe	Spearhead Lake Composting Toilet Installation Project	Sauk-Suiattle Unified Watershed Assessment and Management Plan	The RECIPIENT is installing a composting toilet facility as part of its overall effort to improve water quality at Spearhead Lake. The RECIPIENT owns this 22-acre lake, and allows public access for fishing and camping, but its remote location and lack of facilities has led to abuses and illegal activities, including contamination from human feces. This project will help to reduce bacteria inputs, ensuring a cleaner and safer recreational area.	$0	$22,388	
WQC-2023-StePar*-00109	Stewardship Partners	Wallace Acres Livestock Exclusion and Riparian Restoration	Snohomish River Basin Salmon Conservation Plan, Snoqualmie River Watershed Multiparameter TMDL	The Wallace Acres Livestock Exclusion and Riparian Restoration project improves water quality by installing 1.5 miles of livestock exclusion fencing and restoring approximately 1,540 linear feet (~ 5 acres) of riparian buffer along the mainstem Snoqualmie River with a voluntary agricultural landowner. The project promotes Best Management Practices (BMPs) as part of Stewardship Partners voluntary incentive-based approach to landowner stewardship.	$0	$0	$164,725
WQC-2023-STOI-00097	Spokane Tribe of Indians	DIF project maintenance, riparian restoration, and livestock BMPs	Colville River Watershed Bacteria TMDL	This project includes Direct Implementation Fund (DIF) project maintenance, riparian restoration, and livestock best management practices to address high priority water quality issues at sites identified by ECOLOGY within the Colville, Little Spokane, and Hangman watersheds.	$0	$193,401	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-ThCoPH-00177	Thurston County - Public Health and Social Services Department	Black Lake Pollution Identification and Correction Project	Black Lake Basin Water Resource Protection Study	Conduct a pollution identification and correction project in the Black Lake basin to reduce E. coli bacteria sources. A 2021 Herrera study for Black Lake Special District found high levels of E. coli and presence of human biomarker HF183 in 3 drainages to Black Lake. The PIC project will conduct additional sampling to bracket the sources of bacteria, conduct site visits, work with property owners to ensure septic systems are functioning properly and other bacteria sources are addressed.	$0	$250,000	$0
WQC-2023-Tumwat-00050	Tumwater city of	City of Tumwater's Septic to Sewer Conversion Program	Deschutes River Temperature TMDL	The RECIPIENT will create a more effective septic to sewer conversion program specifically for high-density septic systems in mobile home communities. This project consists of a social marketing campaign with a pilot program at a local mobile home park. As a result of this funding, 39 septic systems will be converted to city sewer and a blueprint for how to run an effective septic to sewer program with mobile home parks will be created for broader regional use.	$0	$500,000	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-Vancou-00186	Vancouver city of	Burnt Bridge Creek Critical Lands Acquisition	Burnt Bridge Creek TMDL Alternative	Purchasing property in this reach of Burnt Bridge Creek will allow the City to preserve and protect an open space, restore riparian habitat, and increase tree canopy to improve air and water quality, support a healthier aquatic community, and lower risk to human health. Preserving green spaces throughout Vancouver is particularly important in areas with fewer outdoor amenities, and higher percentages of low-income or vulnerable individuals, to improve health equity in our community.	$0	$375,000	$0
WQC-2023-WhitCD-00081	Whitman Conservation District	South Fork of the Palouse River Nature Reserve and Learning Center	WRIA 34 – Palouse Watershed Detailed Implementation Plan (2009)	An opportunity has arisen to purchase 125-acres with 3,800 feet of the South Fork of the Palouse River bisecting the property. Approximately 30-acres is FEMA designated floodplain and is need of dire restoration work. The property is only ten minutes from Colfax and would be open to the public, it would also serve as an opportunity to teach the local schools and community about water quality issues on the Palouse.	$0	$367,500	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-WhitCD-00086	Whitman Conservation District	North Fork of the Palouse Restoration	WRIA 34 – Palouse Watershed Detailed Implementation Plan (2009)	In the total maximum daily load (TMDL) report from Department of Ecology's (DOE) Water Quality Program, the North Fork Palouse River has been listed as impaired for DO, pH, and bacteria. A primary causal agent of impairment is cited as nonpoint source pollution. To address these impairments, Whitman Conservation District plans to implement a series of restoration strategies surrounding the confluence of Silver Creek and the North Fork Palouse River at Elberton, WA.	$0	$180,000	$0
WQC-2023-WhitCD-00181	Whitman Conservation District	Main Palouse car riprap removal and bioengineered river bank resloping	Palouse Watershed Plan pages 58-67. Palouse River (North Fork) Watershed DO and pH TMDL (Approved), Palouse River Watershed Bacteria TMDL (Approved), Palouse River Watershed Temperature TMDL (Approved), Palouse River Watershed Toxics TMDL (Approved)	The Palouse River's Total Maximum Daily Load (TMDL) and Water Quality Assessment Category 5 and 4A listings have specifically listed the Palouse River as impaired for pH. Increased temperature, and dissolved oxygen. To address these issues, the Whitman Conservation District (WCD) has identified multiple project sites for riparian restoration in the Palouse River Watershed.	$0	$202,500	$0

Application Number	Applicant	Project Title	Watershed Plans	Project Short Description	CWSRF Standard Loan	Centennial Grant	Section 319 Grant
WQC-2023-WWCoCD-00007	Walla Walla County Conservation District	Canopy Cover Improvements on the Touchet River, Phase 2	Walla Walla River Watershed Temperature TMDL, Snake River Salmon Recovery Plan for SE Washington	This proposed project will plant primary successional riparian species along a 2.5 mile stretch of the Touchet River to improve canopy cover and address the water temperature TMDL. The presence and in some areas near monoculture of false indigo (Amorpha fruticosa) has reduced diversity along the banks of the Touchet River and limited establishment of taller shade trees. For this project, false indigo will be controlled through chemical application prior to planting native vegetation.	$0	$234,648	$0

2.3.3 Load Reduction Estimates by Project in 2022

Load reduction estimates (for some best management practices) are provided by recipients every January for the previous calendar year. Ecology compiles and enters this data into the GRTs database annually. EPA has inquired about yearly fluctuations in the total load reduction estimates found in this section. Load reduction estimates may differ from year to year based on several factors. Significantly, Washington State implements many BMP projects that may not result in nitrogen, phosphorus, or sediment load reductions because they are intended to reduce temperature and/or fecal coliform—which STEPL and PLET cannot currently calculate. Temperature and fecal coliform impairments are of particular concern because of their impacts on shellfish and salmon. Ecology has therefore placed a high priority on implementing BMPs that address these pollutants. Further, implementation of BMPs that target temperature and fecal coliform help address tribal treaty rights at risk. While these efforts may not be adequately captured in the below tables, we believe that they are good investments. We have also included a list of BMP implementations this year (see table in section 2.3.4). These tables, taken together, provide a more accurate picture of the environmental benefits of our investments. Pass through grant project agreements have 3-4 years to complete the scope of work. Load reduction estimates resulting from active projects in 2022 are provided below.

Table 5. Summary of Load Reductions in 2022.

Pollutant	Total Load Reduction Estimate
Biochemical Oxygen Demand (BOD)	77,892 LBS/YR
Nitrogen	48,033 LBS/YR
Phosphorus	18,397 LBS/YR
Sedimentation-Siltation	12,613 TONS/YR

Table 6. Load Reductions per Project in 2022.

Pollutant	State Project No.	Estimated Load Reduction	Unit of Measure
BOD	WQC-2018-SkRiSC-00035	3.5	LBS/YR
BOD	WQC-2018-PaloCD-00110	416	LBS/YR
BOD	WQC-2018-SpoCoD-00127	5771	LBS/YR
BOD	WQC-2018-PaloCD-00167	1.8	LBS/YR
BOD	WQC-2019-Adopta-00003	0.01	LBS/YR
BOD	WQC-2019-PaloCD-00077	40133.9	LBS/YR
BOD	WQC-2019-LCEP-00199	0.001	LBS/YR
BOD	WQC-2019-LCEP-00205	0	LBS/YR
BOD	WQC-2020-Adopta-00032	0.13	LBS/YR
BOD	WQC-2020-PaloCD-00128	19271.07	LBS/YR
BOD	WQC-2020-KooCom-00165	34.5	LBS/YR
BOD	WQC-2021-Adopta-00063	0.14	LBS/YR
BOD	WQC-2021-Adopta-00064	0.03	LBS/YR
BOD	WQC-2021-SpoCoD-00184	694	LBS/YR
BOD	WQC-2021-SpoCoD-00198	11566	LBS/YR
Nitrogen	WQC-2018-SkRiSC-00035	21.6	LBS/YR
Nitrogen	WQC-2018-PaloCD-00110	22.3	LBS/YR
Nitrogen	WQC-2018-SpoCoD-00127	3012.9	LBS/YR
Nitrogen	WQC-2018-PaloCD-00167	1.3	LBS/YR
Nitrogen	WQC-2019-Adopta-00003	0.1	LBS/YR
Nitrogen	WQC-2019-LeCoCD-00030	219.5	LBS/YR
Nitrogen	WQC-2019-PaloCD-00077	21867.5	LBS/YR
Nitrogen	WQC-2019-BellPW-00118	0	LBS/YR
Nitrogen	WQC-2019-LCEP-00199	0.02	LBS/YR
Nitrogen	WQC-2019-OkHiAl-00204	0	LBS/YR
Nitrogen	WQC-2019-LCEP-00205	0.02	LBS/YR
Nitrogen	WQC-2020-Adopta-00032	0.74	LBS/YR
Nitrogen	WQC-2020-MSRF-00143	0.478	LBS/YR
Nitrogen	WQC-2020-PaloCD-00128	9850.47	LBS/YR
Nitrogen	WQC-2020-WWCoCD-00151	225	LBS/YR
Nitrogen	WQC-2020-SnohCD-00152	0.452	LBS/YR
Nitrogen	WQC-2020-UndeCD-00163	602	LBS/YR
Nitrogen	WQC-2020-KooCom-00165	18.25	LBS/YR

Pollutant	State Project No.	Estimated Load Reduction	Unit of Measure
Nitrogen	WQC-2021-Waters-00002	0	LBS/YR
Nitrogen	WQC-2021-PaloCD-00023	5859.98	LBS/YR
Nitrogen	WQC-2021-MCFEG-00062	0	LBS/YR
Nitrogen	WQC-2021-Adopta-00063	4.09	LBS/YR
Nitrogen	WQC-2021-Adopta-00064	1.58	LBS/YR
Nitrogen	WQC-2021-SpoCoD-00184	347	LBS/YR
Nitrogen	WQC-2021-SpoCoD-00198	5824	LBS/YR
Nitrogen	WQC-2022-SnohCD-00022	0.0525	LBS/YR
Nitrogen	WQC-2022-LandCo-00049	36.97	LBS/YR
Nitrogen	WQC-2022-LandCo-00050	40.22	LBS/YR
Nitrogen	WQC-2022-PaloCD-00059	75.89	LBS/YR
Nitrogen	WQC-2022-OxCSAE-00062	0	LBS/YR
Nitrogen	WQC-2022-SnohCD-00083	0.239	LBS/YR
Nitrogen	WQC-2022-ChCoNR-00112	0	LBS/YR
Nitrogen	WQC-2022-MCFEG-00126	0	LBS/YR
Nitrogen	WQC-2022-SkRiSC-00135	0.478	LBS/YR
Phosphorus	WQC-2018-SkRiSC-00035	5	TONS/YR
Phosphorus	WQC-2018-PaloCD-00110	8.2	TONS/YR
Phosphorus	WQC-2018-SpoCoD-00127	1152.7	TONS/YR
Phosphorus	WQC-2018-PaloCD-00167	0.4	TONS/YR
Phosphorus	WQC-2019-Adopta-00003	0.01	TONS/YR
Phosphorus	WQC-2019-LeCoCD-00030	13.6	TONS/YR
Phosphorus	WQC-2019-PaloCD-00077	8438.4	TONS/YR
Phosphorus	WQC-2019-BellPW-00118	0	TONS/YR
Phosphorus	WQC-2019-LCEP-00199	0.01	TONS/YR
Phosphorus	WQC-2019-OkHiAl-00204	0	TONS/YR
Phosphorus	WQC-2019-LCEP-00205	0.01	TONS/YR
Phosphorus	WQC-2020-Adopta-00032	0.13	TONS/YR
Phosphorus	WQC-2020-PaloCD-00128	3798.8	TONS/YR
Phosphorus	WQC-2020-MSRF-00143	0.465	TONS/YR
Phosphorus	WQC-2020-WWCoCD-00151	86	TONS/YR
Phosphorus	WQC-2020-SnohCD-00152	0.4	TONS/YR
Phosphorus	WQC-2020-UndeCD-00163	204	TONS/YR
Phosphorus	WQC-2020-KooCom-00165	6.8	TONS/YR
Phosphorus	WQC-2021-Waters-00002	0	TONS/YR

Pollutant	State Project No.	Estimated Load Reduction	Unit of Measure
Phosphorus	WQC-2021-PaloCD-00023	2257.76	TONS/YR
Phosphorus	WQC-2021-MCFEG-00062	0	TONS/YR
Phosphorus	WQC-2021-Adopta-00063	0.32	TONS/YR
Phosphorus	WQC-2021-Adopta-00064	0.77	TONS/YR
Phosphorus	WQC-2021-SpoCoD-00184	134	TONS/YR
Phosphorus	WQC-2021-SpoCoD-00198	2244	TONS/YR
Phosphorus	WQC-2022-SnohCD-00022	0.06	TONS/YR
Phosphorus	WQC-2022-LandCo-00049	7.4	TONS/YR
Phosphorus	WQC-2022-LandCo-00050	8.48	TONS/YR
Phosphorus	WQC-2022-PaloCD-00059	29.08	TONS/YR
Phosphorus	WQC-2022-OxCSAE-00062	0	TONS/YR
Phosphorus	WQC-2022-SnohCD-00083	0.233	TONS/YR
Phosphorus	WQC-2022-ChCoNR-00112	0	TONS/YR
Phosphorus	WQC-2022-MCFEG-00126	0	TONS/YR
Phosphorus	WQC-2022-SkRiSC-00135	0.465	TONS/YR
Sediment	WQC-2018-SkRiSC-00035	0.6	LBS/YR
Sediment	WQC-2018-PaloCD-00110	6.5	LBS/YR
Sediment	WQC-2018-SpoCoD-00127	901.7	LBS/YR
Sediment	WQC-2018-PaloCD-00167	0.3	LBS/YR
Sediment	WQC-2019-Adopta-00003	0	LBS/YR
Sediment	WQC-2019-LeCoCD-00030	0	LBS/YR
Sediment	WQC-2019-PaloCD-00077	6270.4	LBS/YR
Sediment	WQC-2019-BellPW-00118	0	LBS/YR
Sediment	WQC-2019-LCEP-00199	0	LBS/YR
Sediment	WQC-2019-OkHiAl-00204	0	LBS/YR
Sediment	WQC-2019-LCEP-00205	0	LBS/YR
Sediment	WQC-2020-Adopta-00032	0.02	LBS/YR
Sediment	WQC-2020-PaloCD-00128	3011.23	LBS/YR
Sediment	WQC-2020-MSRF-00143	0.586	LBS/YR
Sediment	WQC-2020-WWCoCD-00151	139	LBS/YR
Sediment	WQC-2020-SnohCD-00152	0.533	LBS/YR
Sediment	WQC-2020-UndeCD-00163	157	LBS/YR
Sediment	WQC-2020-KooCom-00165	5.3	LBS/YR
Sediment	WQC-2021-Waters-00002	0	LBS/YR
Sediment	WQC-2021-MCFEG-00062	0	LBS/YR

Pollutant	State Project No.	Estimated Load Reduction	Unit of Measure
Sediment	WQC-2021-Adopta-00063	0.02	LBS/YR
Sediment	WQC-2021-Adopta-00064	0.01	LBS/YR
Sediment	WQC-2021-SpoCoD-00184	255	LBS/YR
Sediment	WQC-2021-SpoCoD-00198	1807	LBS/YR
Sediment	WQC-2022-SnohCD-00022	0.126	LBS/YR
Sediment	WQC-2022-LandCo-00049	4.86	LBS/YR
Sediment	WQC-2022-LandCo-00050	5.69	LBS/YR
Sediment	WQC-2022-PaloCD-00059	46.97	LBS/YR
Sediment	WQC-2022-OxCSAE-00062	0	LBS/YR
Sediment	WQC-2022-SnohCD-00083	0.293	LBS/YR
Sediment	WQC-2022-ChCoNR-00112	0	LBS/YR
Sediment	WQC-2022-MCFEG-00126	0	LBS/YR
Sediment	WQC-2022-SkRiSC-00135	0.586	LBS/YR

2.3.4 Best Management Practices (BMPs) Implemented in 2022

Pass through grant project agreements have 3-4 years to complete the scope of work. BMPs implemented through active projects in 2022 are provided below.

Table 7 Summary of BMPs Implemented 2022.

BMP Type	Total Acres / Linear Length
Channel Bank Vegetation	1,050 Feet 2.18 Acres
Conservation Tillage Residue Management	10,000 Feet 4,209 Acres
Cut Bank Stabilization	120 Feet 0.25 Acres
Fence	2,385 Feet
Invasive Species/Noxious Weed Control	9,572 Feet 9.45 Acres
Natural Channel Restoration	100 Feet 0.1 Acres
Residue and Tillage Management, No-Till/ Direct Seed	378.4 Acres
Riparian Forest Buffer	52,461 Feet 104.61 Acres
Stream Channel Stabilization	3,300 Feet 1.92 Acres
Stream Exclusion Fencing	1,304 Feet
Stream Habitat Improvement and Management	9,611 Feet 0.23 Acres
Streambank & Shoreline Protection	200 Feet
Tree/Shrub Establishment	6,689 Feet 11.3 Acres

Table 8. BMPs Implemented per Project 2022.

BMP	State Project No.	Project Title	Installed	Unit of Measure
Channel Bank Vegetation	WQC-2019-BellPW-00118	Anderson Creek Water Quality Improvements	1050	FT
Channel Bank Vegetation	WQC-2019-BellPW-00118	Anderson Creek Water Quality Improvements	2.18	AC
Conservation Tillage Residue Management	WQC-2019-LeCoCD-00030	Matching: Thinking Outside the Fertilizer Box: Conservation on Union Flat Creek	10000	FT
Conservation Tillage Residue Management	WQC-2019-LeCoCD-00030	Matching: Thinking Outside the Fertilizer Box: Conservation on Union Flat Creek	278.3	AC
Conservation Tillage Residue Management	WQC-2019-PaloCD-00077	Matching: Thinking Outside the Fertilizer Box: Conservation on Union Flat Creek	750	AC
Conservation Tillage Residue Management	WQC-2020-PaloCD-00128	Direct Seed Partnership on the Palouse	154	AC
Conservation Tillage Residue Management	WQC-2020-PaloCD-00128	Direct Seed Partnership on the Palouse	2743	AC
Conservation Tillage Residue Management	WQC-2021-SpoCoD-00198	Hangman Creek Agricultural BMP Assistance Project	284	AC
Cut Bank Stabilization	WQC-2020-UndeCD-00163	White Salmon River Watershed Water Quality Implementation	120	FT
Cut Bank Stabilization	WQC-2020-UndeCD-00163	White Salmon River Watershed Water Quality Implementation	0.25	AC
Fence	WQC-2019-OkHiAl-00204	Triple Creek Water Quality Restoration Project, Phase 2	2385	FT
Invasive Species/Noxious Weed Control	WQC-2018-PaloCD-00110	Palouse Direct Seed Partnership Implementation and Monitoring	5187	FT
Invasive Species/Noxious Weed Control	WQC-2018-PaloCD-00110	Palouse Direct Seed Partnership Implementation and Monitoring	5.95	AC
Invasive Species/Noxious Weed Control	WQC-2019-OkHiAl-00204	Triple Creek Water Quality Restoration Project, Phase 4	2385	FT
Invasive Species/Noxious Weed Control	WQC-2019-OkHiAl-00204	Triple Creek Water Quality Restoration Project, Phase 5		N/A
Invasive Species/Noxious Weed Control	WQC-2021-Waters-00002	Improving Shade and Temperature Deficits - Middle East Fork Lewis River	3.5	AC

BMP	State Project No.	Project Title	Installed	Unit of Measure
Invasive Species/Noxious Weed Control	WQC-2022-OxCSAE-00062	Upper Snoqualmie River Riparian Enhancement	800	FT
Invasive Species/Noxious Weed Control	WQC-2022-OxCSAE-00062	Upper Snoqualmie River Riparian Enhancement	139890	SQUARE FEET
Invasive Species/Noxious Weed Control	WQC-2022-OxCSAE-00062	Upper Snoqualmie River Riparian Enhancement	1200	FT
Invasive Species/Noxious Weed Control	WQC-2022-OxCSAE-00062	Upper Snoqualmie River Riparian Enhancement	125000	SQUARE FEET
Natural Channel Restoration	WQC-2019-BellPW-00118	Anderson Creek Water Quality Improvements	100	FT
Natural Channel Restoration	WQC-2019-BellPW-00118	Anderson Creek Water Quality Improvements	0.1	AC
Residue and Tillage Management, No-Till/ Direct Seed	WQC-2018-SpoCoD-00127	Farmed Smart Certification and Direct Seed Loan Implementation Program	378.4	AC
Riparian Forest Buffer	WQC-2018-PaloCD-00110	Palouse Direct Seed Partnership Implementation and Monitoring	5187	FT
Riparian Forest Buffer	WQC-2018-PaloCD-00110	Palouse Direct Seed Partnership Implementation and Monitoring	5.95	AC
Riparian Forest Buffer	WQC-2018-PaloCD-00167	Palouse Basin Water Quality Improvements	500	FT
Riparian Forest Buffer	WQC-2018-PaloCD-00167	Palouse Basin Water Quality Improvements	1	AC
Riparian Forest Buffer	WQC-2018-SkRiSC-00035	Lower Skagit Tributaries Riparian Restoration	1800	FT
Riparian Forest Buffer	WQC-2018-SkRiSC-00035	Lower Skagit Tributaries Riparian Restoration	11	AC
Riparian Forest Buffer	WQC-2019-Adopta-00003	Olaf Strad Remeander and Revegetation	150	FT
Riparian Forest Buffer	WQC-2019-Adopta-00003	Olaf Strad Remeander and Revegetation	0.08	AC
Riparian Forest Buffer	WQC-2019-LCEP-00199	Burnt Bridge Creek Stormwater OSPREY Project	2000	FT
Riparian Forest Buffer	WQC-2019-LCEP-00199	Burnt Bridge Creek Stormwater OSPREY Project	3	AC
Riparian Forest Buffer	WQC-2019-LCEP-00205	Woodin Creek Stormwater OSPREY Project	1100	FT

BMP	State Project No.	Project Title	Installed	Unit of Measure
Riparian Forest Buffer	WQC-2019-LCEP-00205	Woodin Creek Stormwater OSPREY Project	3.5	AC
Riparian Forest Buffer	WQC-2019-OkHiAl-00204	Triple Creek Water Quality Restoration Project, Phase 6	2385	FT
Riparian Forest Buffer	WQC-2019-PaloCD-00077	Matching: Thinking Outside the Fertilizer Box: Conservation on Union Flat Creek	3739	FT
Riparian Forest Buffer	WQC-2019-PaloCD-00077	Matching: Thinking Outside the Fertilizer Box: Conservation on Union Flat Creek	6.38	AC
Riparian Forest Buffer	WQC-2020-Adopta-00032	Allen - Grace Confluence: A Riparian Reforestation Project	197	FT
Riparian Forest Buffer	WQC-2020-Adopta-00032	Allen - Grace Confluence: A Riparian Reforestation Project	0.55	AC
Riparian Forest Buffer	WQC-2020-KooCom-00165	Improving Water Quality in Yellowhawk Creek and W. Little Walla Walla River	1600	FT
Riparian Forest Buffer	WQC-2020-KooCom-00165	Improving Water Quality in Yellowhawk Creek and W. Little Walla Walla River	3.67	AC
Riparian Forest Buffer	WQC-2020-MSRF-00143	Methow Water Quality Restoration and Monitoring Project	680	FT
Riparian Forest Buffer	WQC-2020-MSRF-00143	Methow Water Quality Restoration and Monitoring Project	1.65	AC
Riparian Forest Buffer	WQC-2020-PaloCD-00128	Direct Seed Partnership on the Palouse	2119	FT
Riparian Forest Buffer	WQC-2020-PaloCD-00128	Direct Seed Partnership on the Palouse	4.75	AC
Riparian Forest Buffer	WQC-2020-SnohCD-00152	Middle Pilchuck River Riparian Restoration Project	1940	FT
Riparian Forest Buffer	WQC-2020-SnohCD-00152	Middle Pilchuck River Riparian Restoration Project	14.6	AC
Riparian Forest Buffer	WQC-2020-WWCoCD-00151	Canopy Cover Improvements on the Touchet River	8489	FT
Riparian Forest Buffer	WQC-2020-WWCoCD-00151	Canopy Cover Improvements on the Touchet River	6.8	AC
Riparian Forest Buffer	WQC-2021-Adopta-00063	West Fork Quilceda Creek Water Quality Partnership Tulalip Tribes and AASF	1053	FT

BMP	State Project No.	Project Title	Installed	Unit of Measure
Riparian Forest Buffer	WQC-2021-Adopta-00063	West Fork Quilceda Creek Water Quality Partnership Tulalip Tribes and AASF	2.53	AC
Riparian Forest Buffer	WQC-2021-Adopta-00064	Pilchuck River Tributary Buffer Enhancement Partnership; Coon Creek	1990	FT
Riparian Forest Buffer	WQC-2021-Adopta-00064	Pilchuck River Tributary Buffer Enhancement Partnership; Coon Creek	9.26	AC
Riparian Forest Buffer	WQC-2021-MCFEG-00062	Upper Yakima Forest Restoration	200	FT
Riparian Forest Buffer	WQC-2021-MCFEG-00062	Upper Yakima Forest Restoration	1.5	
Riparian Forest Buffer	WQC-2022-ChCoNR-00112	Chumstick Watershed Phased Riparian and Flow Improvement Project	6936	FT
Riparian Forest Buffer	WQC-2022-ChCoNR-00112	Chumstick Watershed Phased Riparian and Flow Improvement Project	1.26	AC
Riparian Forest Buffer	WQC-2022-LandCo-00049	WRIA 55/57 Restoration through BDAs/PALS, Buffers, and Outreach/Education	1600	FT
Riparian Forest Buffer	WQC-2022-LandCo-00049	WRIA 55/57 Restoration through BDAs/PALS, Buffers, and Outreach/Education	71000	SQUARE FEET
Riparian Forest Buffer	WQC-2022-LandCo-00050	Hangman Creek Watershed Riparian and Wetland Restoration	2100	FT
Riparian Forest Buffer	WQC-2022-LandCo-00050	Hangman Creek Watershed Riparian and Wetland Restoration	127000	SQUARE FEET
Riparian Forest Buffer	WQC-2022-MCFEG-00126	Mercer Creek Floodplain and Riparian Restoration Implementation	1300	FT
Riparian Forest Buffer	WQC-2022-MCFEG-00126	Mercer Creek Floodplain and Riparian Restoration Implementation	4.2	AC
Riparian Forest Buffer	WQC-2022-PaloCD-00059	Full Stream Ahead! Riparian Restoration Innovations on the Palouse River	3996	FT
Riparian Forest Buffer	WQC-2022-PaloCD-00059	Full Stream Ahead! Riparian Restoration Innovations on the Palouse River	13.33	AC

BMP	State Project No.	Project Title	Installed	Unit of Measure
Riparian Forest Buffer	WQC-2022-PaloCD-00059	Full Stream Ahead! Riparian Restoration Innovations on the Palouse River	4.3	AC
Riparian Forest Buffer	WQC-2022-SkRiSC-00135	Nookachamps Riparian Restoration Phase II	1400	FT
Riparian Forest Buffer	WQC-2022-SkRiSC-00135	Nookachamps Riparian Restoration Phase II	5.3	AC
Stream Channel Stabilization	WQC-2019-BellPW-00118	Anderson Creek Water Quality Improvements	100	FT
Stream Channel Stabilization	WQC-2019-BellPW-00118	Anderson Creek Water Quality Improvements	0.1	AC
Stream Channel Stabilization	WQC-2021-SpoCoD-00184	Hangman Creek Streambank Stabilization RM-17 Phase II	3200	FT
Stream Channel Stabilization	WQC-2021-SpoCoD-00184	Hangman Creek Streambank Stabilization RM-17 Phase II	1.82	AC
Stream Exclusion Fencing	WQC-2022-MCFEG-00126	Mercer Creek Floodplain and Riparian Restoration Implementation	1300	FT
Stream Exclusion Fencing	WQC-2022-MCFEG-00126	Mercer Creek Floodplain and Riparian Restoration Implementation	4.2	FT
Stream Habitat Improvement and Management	WQC-2019-OkHiAl-00204	Triple Creek Water Quality Restoration Project, Phase 8	2385	FT
Stream Habitat Improvement and Management	WQC-2022-ChCoNR-00112	Chumstick Watershed Phased Riparian and Flow Improvement Project	7226	FT
Stream Habitat Improvement and Management	WQC-2022-ChCoNR-00112	Chumstick Watershed Phased Riparian and Flow Improvement Project	24000	SQUARE FEET
Stream Habitat Improvement and Management	WQC-2022-ChCoNR-00112	Chumstick Watershed Phased Riparian and Flow Improvement Project	0.23	AC
Streambank & Shoreline Protection	WQC-2022-PaloCD-00059	Full Stream Ahead! Riparian Restoration Innovations on the Palouse River	200	FT
Streambank & Shoreline Protection	WQC-2022-PaloCD-00059	Full Stream Ahead! Riparian Restoration Innovations on the Palouse River	0	AC
Tree/Shrub Establishment	WQC-2019-LCEP-00199	Burnt Bridge Creek Stormwater OSPREY Project	2000	FT
Tree/Shrub Establishment	WQC-2019-LCEP-00199	Burnt Bridge Creek Stormwater OSPREY Project	3	FT

BMP	State Project No.	Project Title	Installed	Unit of Measure
Tree/Shrub Establishment	WQC-2022-PaloCD-00059	Full Stream Ahead! Riparian Restoration Innovations on the Palouse River	3996	FT
Tree/Shrub Establishment	WQC-2022-PaloCD-00059	Full Stream Ahead! Riparian Restoration Innovations on the Palouse River	4.3	AC
Tree/Shrub Establishment	WQC-2022-SnohCD-00022	French Creek Tributary Riparian and Wetland Restoration	297	FT
Tree/Shrub Establishment	WQC-2022-SnohCD-00022	French Creek Tributary Riparian and Wetland Restoration	3	AC
Tree/Shrub Establishment	WQC-2022-SnohCD-00083	North Fork Stillaguamish Floodplain Riparian Restoration	393	FT
Tree/Shrub Establishment	WQC-2022-SnohCD-00083	North Fork Stillaguamish Floodplain Riparian Restoration	4	AC

2.4 Unliquidated Obligation (ULO)

Table 9. CWA 319 Grant Balance (Unliquidated Obligations) as of March 31, 2022.

Project	Grant Number	FY	Start	End	Award Amount (Fed)	Total Expenditures	Unspent Balance (ULO)	% ULO
FA11	C9-00044910	17	7/1/2017	6/30/2022	6,139,000	6,134,557	4,443	0.07%
FA12	C9-00044911	19	7/1/2019	6/30/2024	6,169,000	4,767,052	1,401,948	22.73%
FA13	C9-00044912	20	7/1/2021	6/30/2026	3,233,000	2,485,785	747,215	23.11%

Table 10. CWA 319 Grant Balance (Unliquidated Obligations).

Project	Grant Number	FY	Start	End	Award Amount (Fed)	Total Expenditures	Unspent Balance (ULO)	% ULO
FA11	C9-00044910	17	7/1/2017	6/30/2022	4,117,334	7,085,104	-	0.00%
FA12	C9-00044911	19	7/1/2019	6/30/2024	4,112,667	4,221,935	-	0.00%
FA13	C9-00044912	20	7/1/2021	6/30/2026	3,233,000	809,008	2,423,992	74.98%

Numbers are based on Grant amount awarded minus expenditures.

Chapter 3: Implementation in Action

In 2022, Ecology continued our internal and external efforts to achieve nonpoint pollution reduction goals in accordance with the state Nonpoint Pollution Management Plan. In addition to providing on-going guidance to our own staff, we have continued to build on external partnerships and use our nonpoint authority to make progress in cleaning up the state's waters.

In 2020, we reached a settlement agreement with Northwest Environmental Advocates, which included several commitments. Ecology is dedicating resources to implementing this settlement agreement in upcoming years and has included some of the progress in this annual report.

We achieved several key milestones in implementing the settlement agreement:

- Met the deadline (end of 2022) for updating and submitting to EPA the Washington State Nonpoint Plan.
- Completed four chapters of the Voluntary Clean Water Guidance, including the chapter addressing riparian areas on agricultural lands, by the end of 2022.
- Reporting requirements: Annually Ecology will identify the priority watersheds in which Ecology will focus its non-grant implementation efforts (e.g., TMDL implementation, other nonpoint source control implementation) and will include a description of priority actions to be conducted in each priority watershed. In the annual report Ecology will include the following information: Update about the status and progress of BMP guidance development; Description of updates to Washington funding guidelines based on BMP guidance development; Use of BMP guidance for technical assistance; Use of BMP guidance in new TMDLs and TMDL implementation plans, TMDL implementation, and TMDL alternatives; BMP outreach materials developed and training provided to field staff; Number of watershed evaluations conducted per watershed; and Number of complaints received and summary of complaint types.

Chapter 3 is divided into five sections that align with goals identified in the 2015 Nonpoint Pollution Management Plan (we will continue to use the same structure with the 2022 updated Nonpoint Plan):

1) Clean up impaired waters and meet water quality standards.
2) Ensure clear standards.
3) Develop and strengthen partnerships.
4) Monitor waters for nonpoint sources impairments and program effectiveness.
5) Administer the Nonpoint Source Program as effectively and efficiently as possible.

The summaries within each section include activities that supported the Nonpoint Management Plan goals during calendar year 2022. Within these goals, significant progress has been made statewide to reduce nonpoint source pollution, including:

- Completed and submitted to EPA multiple Total Maximum Daily Load (TMDL).

- Implementing nonpoint TMDLs and other advanced water quality restoration efforts through a combination of grants/loans and enforcement tools.
- Continued application of NMFS riparian buffers guidelines for Ecology-funded nonpoint grant and loan projects.[4]
- Ongoing coordination with important partners such as the WA Department of Agriculture, the Agriculture and Water Quality Advisory Committee, and the WA Forest Practices Board.
- Working with conservation districts, local governments, and nonprofit organizations on nonpoint education and outreach efforts.
- Completed four chapters of the Voluntary Clean Water Guidance for Agriculture, which identify BMPs that prevent water pollution and support the achievement of water quality standards in surface waters flowing through agricultural lands. Made progress on additional chapters.

Many sections of this chapter are divided into progress at the regional scale due to how regional staff work in and with different counties, watersheds, and regional partners. The below map shows the areas where regional staff dedicate their time. Our regional offices are divided into the Southwest Regional Office (SWRO), including the Vancouver Field Office, Northwest Region Office, including the Bellingham Field Office (NWRO), the Central Regional Office (CRO), and the Eastern Regional Office (ERO).

[4] More information on Ecology's funding programs and guidelines can be found on the Ecology Water Quality Combined Funding Program webpage.

3.1 Goal 1: Clean-up impaired waters and meet water quality standards.

3.1.1 Development of Watershed Clean-up plans: Total Maximum Daily Loads (TMDL), Advanced Restoration Projects (ARP) and Straight to Implementation (STI) projects

In 2022 Ecology submitted two watershed TMDLs to EPA (covering 16 individual TMDLs).

- Budd Inlet DO TMDL (covers 13 individual TMDLs)—submitted to EPA on October 26, 2022, and approved by EPA on December 16, 2022.
- Lower White River pH TMDL (covers 3 individual TMDLs)—submitted to EPA on December 21, 2022, and approved by EPA on January 13, 2023.

The table below lists the status of each Bridge Metric priority project (Federal Fiscal Year 22-24). Additional information about these projects is provided in the remaining portion of this section.

Table 11. List of bridge metric projects.

Bridge Metric Projects in 2023	Status
Whatcom Creek Bacteria TMDL	Currently submitted for 30-day public comment period.
Drayton Harbor Bacteria TMDL	TMDL planned to be completed in 2024.
Wide Hollow Mulitparameter TMDL	Allocations being developed, report writing in progress. TMDL planned to be completed by 9/30/2024 Bridge Metric deadline.
White Salmon Bacteria STI	Data collection underway, in progress beyond 2024.
Spring Flat STI	Initial draft completed in 2022. On track for strategy to be completed in 2023.
Alakali Flat STI	Early action implementation underway. Outline developed, strategy planned to be completed December 2023.
Almota & Little Almota STI	Outline and timeline under development.
Hangman DO/pH ARP	Field work completed. Sediment study draft completed. On track to begin drafting plan in 2023.
Hawk Creek STI	Early action implementation and planning in 2022. Strategy to be developed in 2023.
Upper Colville STI	Early action implementation and planning in 2022. Strategy to be developed in 2023.
Pataha Creek Multiparameter	Extended project scoping originally scheduled for late 2022. Rescheduled for 2023.
Pend Oreille Tribs Multiparameter TMDL	Extended project scoping originally scheduled for late 2022. Rescheduled for 2023.
French Creek ARP	Data collection quality assurance project plan (QAPP) being developed.

Bridge Metric Projects in 2023	Status
Soos Creek Fine Sediment	Report writing ongoing-calculating allocations.
Soos Creek DO/Temperature/Bacteria TMDL	Project rebooted. Data collection quality assurance project plan (QAPP)being edited.
Budd Inlet DO TMDL	Approved by EPA December 2022.
Lower White River pH TMDL	Approved by EPA January 2023.
Burnt Bridge Creek ARP	Technical report from Environmental Assessment Program complete and is informing the ARP report.
Lacamas Creek ARP	Currently waiting on source assessment to inform plan writing

Northwest Regional Office

Ecology is in the process of developing a fine sediment TMDL in Soos Creek to address impairments to benthic invertebrates, an indicator of stream health. This is the first TMDL of its kind in the state. Fine sediments sourced from upland sources and those produced through instream erosion will have to be controlled to improve stream habitat and meet water quality standards. In 2022 Ecology continued work on the TMDL study. We anticipate finalizing the technical work in 2023 and hosting implementation-focused meetings with stakeholders, Tribes, and others in order to complete this TMDL and its implementation plan. In addition to efforts to control turbidity, the restoration of degraded habitat by improving riparian buffers and increasing channel complexity will also be part of the accompanying implementation plan.

The second TMDL Ecology is developing in Soos Creek will address temperature and dissolved oxygen impairments that indicate a failure to meet the aquatic life designated use and bacteria impairments that indicate a failure to meet recreational uses. Data collection efforts are underway to support the technical analyses for this project.

Finally, we continued work on the French Creek watershed clean-up plan. In 2022, we continued technical work. Progress on this TMDL has been slowed by possible natural conditions issues.

Southwest Regional Office

TMDLs

The SWRO completed two TMDLs in 2022: Budd Inlet DO TMDL and the Lower White River pH TMDL. We held a comment period for the Budd Inlet DO TMDL from June 8, 2022, through July

25, 2022. Public comments and our response to comments are included in an appendix to the plan. We held a public comment period, June 16 through July 31, 2022, on the draft Lower White River TMDL and implementation plan documents. Responses to comments were included as an appendix to the report. The plan has been revised to include comments, our response to those comments, and edits to the TMDL and implementation plan. Completed these two long running TMDLs is a significant milestone.

Advanced Restoration Projects

In 2022 Ecology continued work on the Burnt Bridge Creek Advanced Restoration Project. The Burnt Bridge Creek Partnership was formed in February 2021 to develop and implement the Water Cleanup Plan. This Water Cleanup Plan will focus on best management practices and implementation actions to improve water quality. The Partnership will meet regularly through 2022. More information on the project can be found on our Burnt Bridge Partnership webpage.[5]

Ecology also continued work on the Lacamas Creek Watershed ARP. During 2022 the focus was on developing the Source Assessment which will be used to underpin the water clean up plan for the watershed. More information on the project can be found on our Lacamas Creek Partnership for Clean Water webpage.[6]

Central Regional Office

In 2022, the Central Regional Office (CRO) continued development of the Wide Hollow Creek Temperature TMDL. The TMDL project manager is working with NPDES permit managers in developing means to address the needed loading allocations for the TMDL. The implementation plan for Upper Naches and Cowiche Creek Temperature TMDL Plan is under development and expectations for implementation are being communicated to WQ partners in the watershed.

No new TMDL or STI water cleanup projects were initiated in 2022. The study plan for the Bacteria Water Cleanup Project in the White Salmon River has been completed and has begun collecting data to support water cleanup efforts.

Eastern Regional Office

Ecology's Eastern Regional Office continues to focus on TMDL and STI implementation-prioritizing resources toward achieving on-the-ground actions that get to clean water rather than new TMDL development. ERO has is expanding STI work to several watersheds: Alkali Flat Creek, Almota Creek, Spring Flat Creek, Hawk Creek, and Upper Colville watershed. In 2022 we continued our watershed evaluations in these watersheds to collect information on problem sites and connect with local partners. We planned on completing the associated STI plans for Alkali and Spring Flat Creek in 2022. However, because of staffing changes and associated vacancies, the plans were not completed. We anticipate completing these plans in 2023. Hawk Creek is expected to be completed in 2024. Upper Colville and Almota Creek STI projects remain

[5] https://www.ezview.wa.gov/site/alias__1962/37697/burnt_bridge_creek_partnership.aspx
[6] https://www.ezview.wa.gov/site/alias__1962/37698/lacamas_creek_partnership_for_clean_water.aspx

on our Bridge Metric priories list to be in development through when the Bridge Metric performance measure period ends (September 30, 2024).

Statewide Projects

Puget Sound Nutrient Source Reduction Project

Several key project milestones were met in 2022 for the technical work, including:

- **Development of the Year 2 Optimization Scenarios.** These scenarios evaluate the predicted improvement from multiple combinations of WWTP and watershed inflow reductions to understand how emphasizing anthropogenic nutrient reductions spatially and temporally affect DO standards attainment. Scenarios[7] were developed with project steering committee input and shared with the Nutrient Forum for feedback. These scenarios will be evaluated with the Salish Sea Model (SSM) in 2023.
- **Initiation of the Puget Sound Seasonal SPARROW model development**. Ecology and the USGS are collaborating on the development of a seasonally dynamic SPARROW model to quantify anthropogenic nutrient loads in all of the region's watersheds and advance our understanding of the spatial and temporal distribution of those sources and loads. A Quality Assurance Project Plan[8] was developed by Ecology and the USGS and published in October 2022. Ecology also assembled and organized the anthropogenic nutrient input data for USGS and the USGS team began working on model development. The project schedule currently puts completion of the model and publishing of the USGS Scientific Investigations Report documenting the model in June 2024. This watershed nutrient load model will be used to inform the watershed implementation and TMDL development phase of the PSNSRP that will begin after completion of the NRP. The Puget Sound Seasonal SPARROW model is also a priority project for the Federal Puget Sound Task Force.
- **Addressing SSM Peer-review comments.** Ecology contracted with an independent scientific peer-reviewer to begin reviewing our use of the Salish Sea Model and our analytical approach in 2022. Ecology's SSM team has already begun addressing peer-review comments and will complete those in 2023 before starting on the Year 2 scenarios so all final modeling work will meet the peer-reviewed standards. That includes updates to both the marine WWTP and watershed inflow inputs to expand the datasets to include more recent years and improve regressions that will increase our confidence in the model inputs and predictions.

[7] https://www.ezview.wa.gov/Portals/_1962/Documents/PSNSRP/Year%202%20Optimization%20Scenario%20Proposal%20Forum%20Packet.pdf

[8] https://apps.ecology.wa.gov/publications/SummaryPages/2203109.html

Stakeholder engagement

We continue to engage with the Nutrient Forum, our stakeholder engagement group, comprised of the regulated community, tribes, and all levels of government, industry, environmental groups, academics, and local implementers. We organized two virtual Nutrient Forum meetings this year, which were well attended:

- February 2022: Discussion and feedback of Ecology's Year 2 Optimization Scenarios proposal
- December 2022: Overview of the Puget Sound SPARROW model project; an update on Ecology's installation of a new Puget Sound continuous nitrogen freshwater monitoring network; and other project updates.

We plan to host multiple Forum meetings in 2023 and 2024, which will focus on discussing strategies for addressing nutrients in watersheds, presenting the next round of Salish Sea modeling results, and discussing potential WWTP and watershed inflow nutrient load targets for the final NRP.

3.1.2 Implementation of TMDLs, STIs, Nonpoint Enforcement Efforts

Ecology continues to promote water cleanup activities across Washington State with an emphasis in our TMDL, STI and Advance Restoration Project watersheds. Each of our regional offices have chosen selected areas where we are attempting to increase the pace of BMP implementation to address nonpoint pollution. The following are focus watersheds for our regional staff's implementation efforts and are part of continuing multi-year efforts (focal issues in parentheses):

1. Samish River (bacteria TMDLs implementation)
2. South Skagit Bay (Watershed Evaluation)
3. Lower Skagit Tributaries (temperature TMDL implementation)
4. Nooksack River (bacteria TMDL Implementation)
5. Drayton Harbor (bacteria TMDL developments)
6. Whatcom Creek (bacteria TMDL completion)
7. Lake Whatcom multiparameter (TMDL implementation)
8. South Fork Nooksack River (temperature TMDL implementation)
9. Upper Chehalis- Newaukum River (bacteria TMDLs)
10. Puyallup River- Boise, Pussyfoot and Second Creeks (bacteria TMDLs)
11. Key Peninsula (nonpoint enforcement- bacteria)
12. Henderson and Eld Inlets (bacteria TMDLs)
13. Hangman Creek (bacteria, dissolved oxygen, nutrients, pH, temperature, turbidity TMDLs)
14. North Fork and South Fork Palouse River (bacteria, temperature TMDLs)
15. Alpowa, Deadman/Meadow Creeks (bacteria, dissolved oxygen, pH, temperature STI)
16. Steptoe, Alkali Flat, Almota Creeks (bacteria, dissolved oxygen, pH, temperature STI)
17. Asotin Creek (Temperature STI)
18. Upper and lower Yakima River watersheds (sediment, bacteria, temperature TMDLs)
19. Ohop Creek (Nisqually bacteria TMDL)

20. Skokomish River (nonpoint enforcement - bacteria, pH, dissolved oxygen, ammonia)
21. North Oakland Bay (bacteria, temperature, dissolved oxygen TMDL)
22. East Fork Lewis River (bacteria, temperature ARP)
23. Lacamas River (bacteria, pH, temperature, dissolved oxygen ARP)

Southwest Regional Office

The Southwest Region Office (SWRO) spans WRIAs 10-29, spread throughout twelve counties. Nonpoint staff frequently coordinate with local partners, including municipal and county government agencies, interagency workgroups, Pollution Identification and Collection (PIC) groups, local Tribes, conservation districts, and local watershed groups. Information is shared with our partners through workgroup meetings, monthly conservation district (CD) board meetings, and distribution of our SW Region's monthly newsletter. This newsletter highlights recent nonpoint activities, areas of growing concern, new research, environmental complaints, and funding opportunities.

Through attendance at monthly conservation district board meetings, nonpoint staff are able to further develop cooperative relationships with CDs. Because CD's are the trusted local technical assistance resource for landowners needing to make improvements, these relationships consistently prove to be invaluable for implementing water quality improvement BMPs.

Due to the high costs of BMP implementation for landowners, we work to support grant applications from CDs and other local partners. Nonpoint staff work with grants staff to provide grant information, application assistance, and feedback prior to the grant submission deadline.

Through technical assistance letters, outreach mailers, and in-person site visits, nonpoint staff provide landowners with resource-specific water quality education materials (e.g., impacts of livestock/land-use practices on water quality, agricultural BMPs for water quality protection, and onsite-septic system maintenance, etc.). We work with landowners to contextualize the impacts of local actions on water quality, explain water quality data, and provide referrals to local partners for financial assistance through cost-share programs and grants.

Each staff member conducts watershed evaluations based on pollution concerns, resource concerns (e.g., shellfish), complaints, and continued monitoring needs. Water quality samples are taken to help identify areas for further investigation and to monitor potential improvements. These evaluations help to prioritize efforts and focus resources throughout the region.

Staff respond to complaints submitted in Ecology's Environmental Report Tracking System (ERTS) and coordinate with local agencies to resolve the issue. Identified nonpoint source pollution sites of concern are recorded in our Nonpoint Inspection (NPI) database and we follow the Nonpoint Desk Book Manual and compliance flow chart timelines.

For focal watersheds, priority actions taken in 2022 are highlighted below.

Priority Watershed Name: Boise, Pussyfoot, and Second Creeks- Enumclaw Plateau

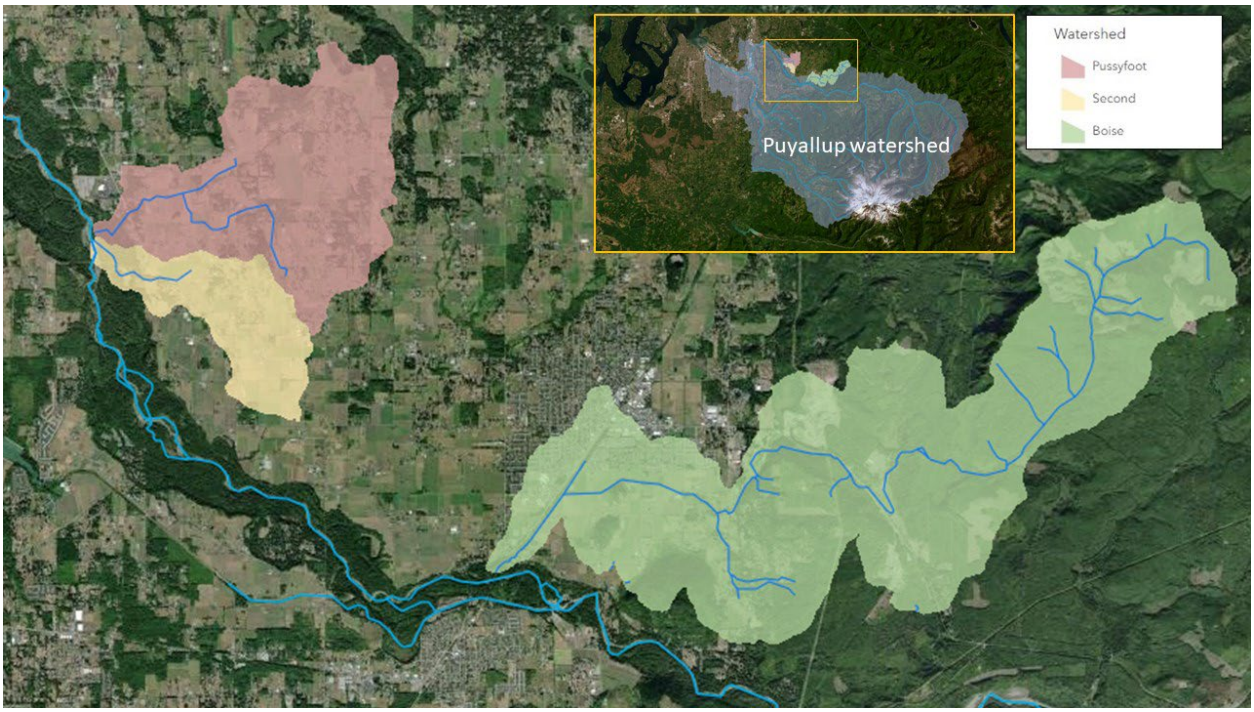

Figure 3. Map showing White River TMDL priority watersheds - Boise, Pussyfoot, and Second Creeks.

Implementing: Puyallup Watershed Fecal Coliform TMDL in Boise, Pussyfoot, and Second Creeks.

Summary/Context Info:

Since 2014, Ecology nonpoint staff have been collaborating with other state and local partners to monitor, identify, and address pollution issues within the Enumclaw MS4 and the surrounding areas. Ecology identified three tributaries within the Enumclaw plateau as priority watersheds: Boise Creek, Pussyfoot Creek, and Second Creek. Nonpoint pollution inputs within these watersheds significantly increase during the wet season due to the poor drainage throughout the plateau. External partners include the Muckleshoot Tribe, USDA's Natural Resources Conservation Service, Washington State Department of Agriculture, King County Livestock, King County Public Health, King County Department of Water and Land Resources, King County Public Health, King Conservation District, City of Enumclaw, and the Enumclaw Community Association.

Priority Actions Completed in 2022:

Education and Outreach

- **Educational material handouts:** At six residences, staff left door hangers with educational materials, including a landowner self-assessment and guidance regarding clean water and agriculture.

Financial Assistance

- **Feedback and review:** Worked with County and NGO partners to review grant proposals and provide feedback on available funding sources.

Partner Coordination

- **Communicated and coordinated reported concerns through the ERTS system:** Worked with area partners to identify appropriate responses to ERTS complaints.
- **Large operations and CAFO permitting:** Staff coordinated with the Washington State Department of Agriculture to address two dairy facilities that discharged in 2022 and are required to obtain coverage under the CAFO permit.

Pollution Identification/Watershed Evaluation:

- **Watershed assessments:** Staff completed 16 watershed assessments where sites of concern were documented in the NPI database. Staff tracked water quality improvements, elevated water quality concerns, and other important information pertaining to water quality.

Compliance/Technical Assistance Activities

- **Outreach letters:** Six outreach letters were sent to landowners in the Pussyfoot Creek watershed where staff have observed water quality concerns.
- **Site visits:** A total of 23 site visits were completed on parcels that have been identified as sites of concern. Site visits have led to landowners taking recommended steps or Ecology taking further enforcement actions.
- **Compliance steps:** Following the established compliance pathway, staff sent five Technical Assistance Letters, one Warning Letter, and one Administrative Order.

Monitoring Activities

- **Monitoring pollution inputs:** Staff collected 12 samples for source identification and pollution confirmation.

Priority Watershed Name: East Fork Lewis River

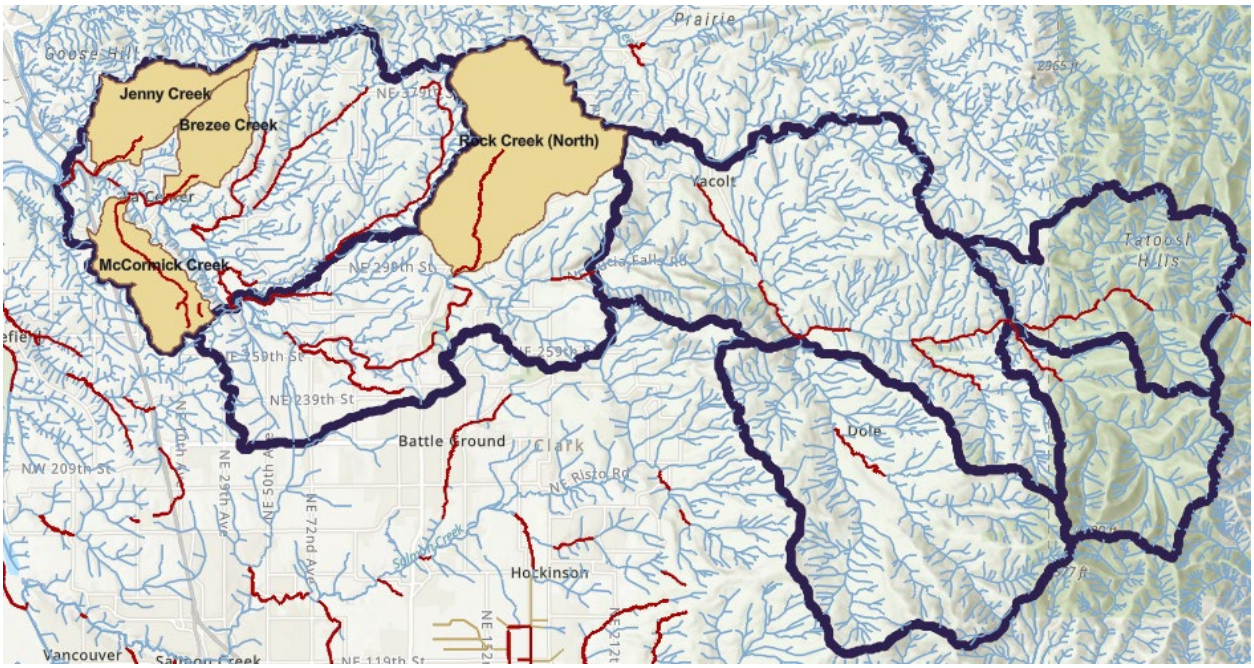

Figure 4. Map of the East Fork Lewis River and surrounding areas.

Implementing: East Fork River Alternative Restoration Plan[9]

Summary/Context Info:

The East Fork Lewis River (EFLR) Alternative Restoration Plan was approved by EPA in 2021 to address temperature and bacteria impairments. The EFLR watershed is home to both the fastest growing city in Washington State, and five high priority populations of Endangered Species Act (ESA) listed salmon and steelhead. The watershed has seen a 47 percent increase in human population since 2000, and provides recreation, timber, agriculture, and water resources for this rapidly growing region of the State. At the same time, the watershed is key to the recovery of ESA-listed salmon and steelhead that rely on the mainstem and tributaries for critical spawning and rearing habitat. The Poop Smart Clark Pollution Identification and Correction (PIC) group is working collaboratively to identify bacteria sources and to direct resources to problem areas. External partners include Clark County Conservation District, Clark Public Utilities, Washington State University Extension, Clark County Public Health, Clark County Clean Water, and the Lower Columbia Estuary Partnership.

[9] https://apps.ecology.wa.gov/publications/documents/2110051.pdf.

Priority Actions Completed in 2022:

Education and Outreach

- **Outreach:**
    - Within the East Fork Lewis River Watershed, Ecology staff identified parcels needing livestock technical assistance to address potential water quality pollution. Staff sent 17 letters and left 12 door hangers with information regarding funding assistance and agricultural best practices.
    - In four priority sub-watersheds within the East Fork Lewis River watershed, (Jenny Creek, Brezee Creek, Rock Creek & McCormick Creek) the Poop Smart Clark PIC group, of which Ecology is a participating member, distributed 238 flyers and held two workshops describing the Poop Smart Clark Program. 253 flyers were distributed to agricultural landowners and 260 flyers to landowners that may need septic repair assistance with the goal of eliminating bacteria sources through technical assistance opportunities.

Financial Assistance

- **Funding:** The Poop Smart Clark PIC program commenced in 2022 and is currently working with funds from both Ecology and NRCS. When providing technical assistance to landowners, Ecology staff provide information regarding financial assistance available through CD cost-share or direct payments for the implementation of eligible practices.

Partner Coordination

- **Partners meetings:** Ecology staff participated in monthly Poop Smart Clark PIC program meetings, and monthly CD board meetings.

Pollution Identification/Watershed Evaluating

- **Watershed Evaluation:** Ecology staff utilized monitoring data to identify properties along waterways with high bacteria concentrations and prioritized them based on land use and septic data from Clark County Public Health. On-the-ground watershed assessments and virtual desktop surveys were used to identify areas of the watershed with agricultural land uses.

Compliance Activities

- **Technical Assistance:** Following the Nonpoint Deskbook Manual, Ecology staff responded to sites identified during watershed assessments and ERTS reports. Ecology staff sent nine technical assistance letters referring landowners to the Working Lands Program Manager with Clark Conservation District.

Monitoring Activities

- **Source Tracking:** Clark County Clean Water took 111 water quality samples with DNA biomarker tracing to help determine the source of bacteria. Bacteria hot spots were identified for humans, dogs, horses, and ruminants. Samples were also tested for optical brighteners to identify where failing septic systems might be within the watersheds. Sample results were then used by Ecology staff and the Poop Smart Clark PIC group to help prioritize areas within the watershed for focused outreach efforts.

Priority Watershed Name: Greater Key Peninsula

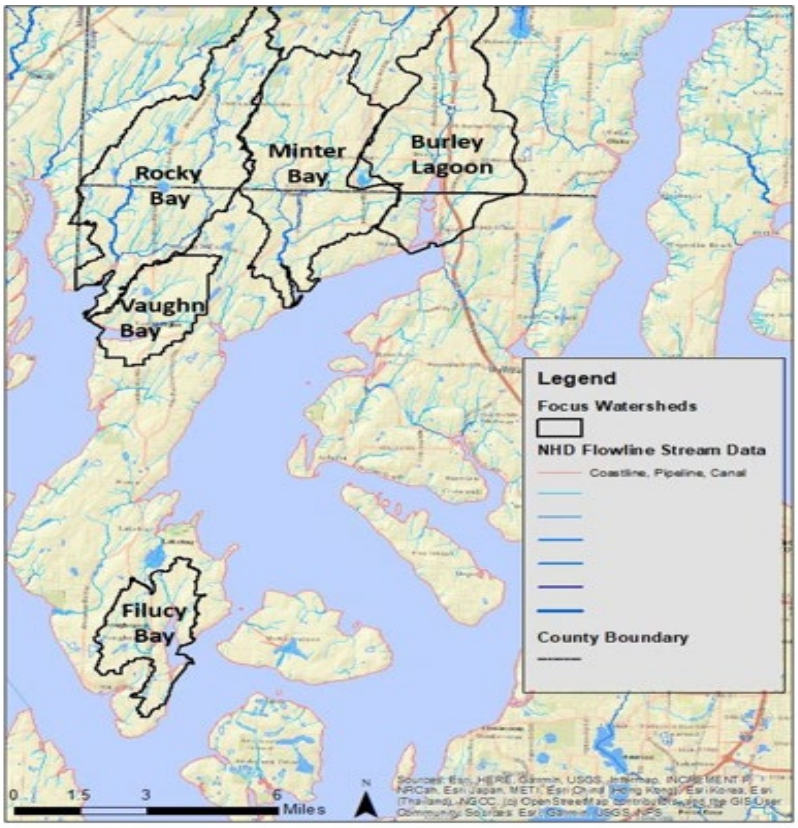

Figure 5. Map of the five focal sub-watersheds of the Key Peninsula.

Implementing: Puget Sound Partnership Action Agenda

Nonpoint work within these five sub-watersheds is funded by a National Estuary Program (NEP) grant that is overseen and administered through the Washington Department of Health. Nonpoint staff work with local partners, Tacoma-Pierce County Health Department, Pierce County Planning and Public Works Department, Pierce Conservation District, Pierce County Code Enforcement, Kitsap Public Health, and landowners to reduce nonpoint sources of bacterial pollution originating from agricultural activities.

Summary/Context Info:

The entire Key Peninsula is 16 miles long and extends southward from the Kitsap Peninsula into the South Puget Sound, flanked by Case and Carr Inlets. The Greater Key Peninsula project area includes Pierce County drainages from Rocky Bay, Vaughn Bay, Filucy Bay, Burley Lagoon, and Minter Bay. These shallow, tidally influenced bays are known for low flushing rates, abundant shellfish, and continual shellfish closures due to elevated levels of fecal bacteria. Growing areas in these five sub-watersheds have been closed periodically for decades and the local PIC program has been coordinating responses.

Land use patterns on the Key Peninsula range from small-scale agriculture and forest lands to residential and vacation homes, presenting a variety of sources of nonpoint pollution. Nonpoint staff work with local partners to identify the nature of pollution sources (e.g., livestock or on-site septic systems) and respond where our partners' jurisdiction does not extend. This often includes addressing agricultural sources. Staff also function as a regulatory backstop when local partners' authority is unable to bring about changes that adequately protect water quality.

Priority Actions Completed in 2022:

Education and Outreach

- **Communicating education information:** Staff presented educational information through 13 communications to landowners within the five watersheds. Communications included technical assistance letters, phone calls, emails, and door hangers.

Financial Assistance

- **Offers of financial assistance resources:** Staff gave information regarding opportunities for landowners to access financial assistance resources through ten correspondences. Staff also provided information regarding grant opportunities to local partners on three occasions.
- **Successful connections to financial assistance:** Staff successfully created pathways for six landowners of sites of concern to access financial assistance opportunities with the Conservation District through communications with our partners and referrals.

Partner Coordination

- **Partner meetings:** Staff participated in 12 PIC meetings and 7 additional multi-partner meetings to coordinate efforts to address specific pollution concerns. Staff attended Pierce CD board meetings to provide updates and serve as a bridge between the two agencies.

Pollution Identification/Watershed Evaluating

- **Watershed evaluations**: Five watershed evaluations were completed in 2022, during which 18 agricultural sites of concern were identified and prioritized for follow-up actions.
- **Complaint/Referral response:** Staff coordinated with local partners to respond to the downgrade of approximately 40 acres of shellfish growing areas in Vaughn. Both County and Ecology staff surveyed the area and were unable to identify specific sources of bacteria pollution. County staff are following up on suspected on-site septic systems that may be contributing pollution.

Compliance Activities

- **Technical assistance and compliance follow-through:** Staff issued 7 technical assistance letters, delivered 1 door hanger, and conducted 8 evaluations of sites of concern from the public right-of-way. Staff resolved 10 priority sites of concern by observing livestock management practices to protect water quality had been put in place.

Monitoring Activities

- **Investigatory collection:** Local partners were able to confirm manure management practices were improved and risk of runoff was resolved. Staff observed progress on 20 sites of concern, including older sites with a history of noncompliance.
- **Partner PIC monitoring –** Staff utilized data collected by the local health department or the WA State Department of Health to respond to elevated bacteria detected in assigned focus watersheds.

Priority Watershed Name: Eld Inlet, Henderson Inlet, & Nisqually Reach

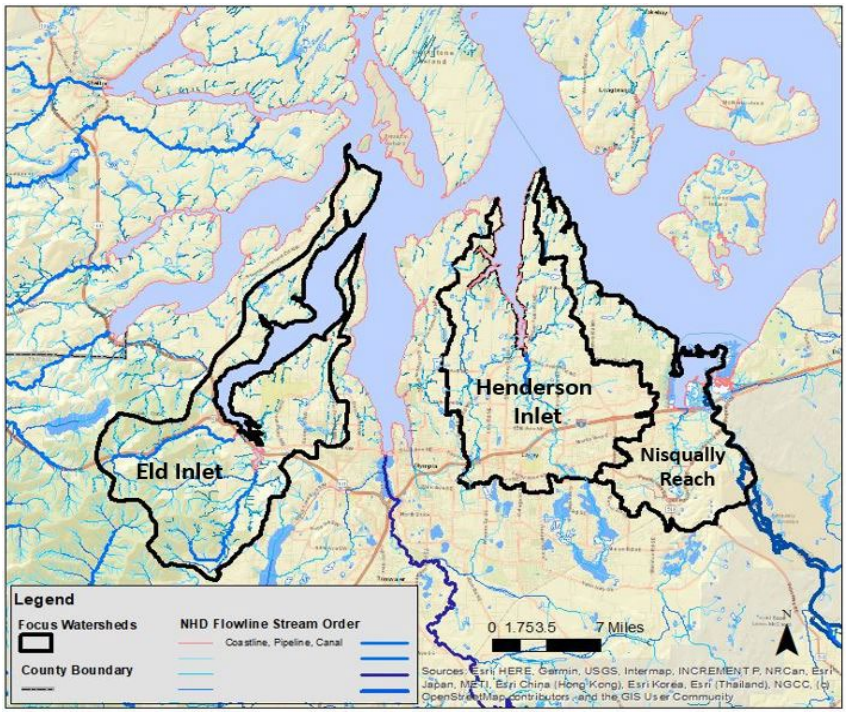

Figure 6. Map showing locations of the three priority watersheds in South Puget Sound.

Implementing: Puget Sound Partnership Action Agenda

Nonpoint work within these three sub-watersheds is funded by a National Estuary Program (NEP) grant that is overseen and administered by the Washington Department of Health (DOH). Nonpoint staff work with local partners such as Thurston County Public Health and Social Services, Thurston Conservation District, Thurston County Code Enforcement, Henderson Inlet/Nisqually Reach Shellfish Protection District, and landowners to reduce nonpoint sources of bacteria pollution originating from domestic and agricultural activities.

Summary/Context Info:

The Eld and Henderson Inlets and the Nisqually Reach drainage areas are located within the South Puget Sound, known for low flushing rates and abundant shellfish habitat. These watersheds have shellfish growing areas identified by DOH as at risk of closure due to elevated marine fecal coliform levels. These watersheds also support salmon habitat in rural, suburban, and urban areas and the majority of land use is residential with a low density of small agricultural sites. SWRO staff have been coordinating nonpoint efforts in these watersheds in concert with local partners' outreach and PIC work.

Priority Actions Completed in 2022:

Education and Outreach

- **Partner coordination to provide educational materials and accurate information to landowners:** Staff coordinated with three partners to gather relevant information for landowners, specifically for equestrian activities and associated waste disposal.

Financial Assistance

- **Offers of financial assistance resources:** Staff provided information regarding grant opportunities to local partners on three occasions.

Partner Coordination

- **Quarterly partner meetings:** Staff facilitated and participated in four Pollution, Identification and Correction (PIC) meetings with local partners to coordinate efforts, provide updates, and address specific pollution concerns. Four new partners have been brought into this PIC group to offer insight, resources, and information to better support landowners in making changes to their land management practices.
- **Monthly partner meetings:** Staff participated in Thurston Conservation District board meetings, to provide guidance and support to local partners.

Pollution Identification/Watershed Evaluating

- **Complaint/Referral response:** Staff coordinated with local partners to respond to concerns, including a report of sediment inputs to salmon habitat in Perry. County code enforcement was referred, and local residents began looking into improvements to their private infrastructure that would be protective of water quality and local salmon populations.

Compliance Activities

- **Site of concern resolution and follow-up:** Staff coordinated with local partners to resolve nonpoint water quality concerns at three previously identified sites of concern.

Monitoring Activities

- **Pollution Identification and Correction (PIC) coordination:** Staff coordinated and participated in four PIC and two Shellfish Protection District meetings, as well as regular informal staff-to-staff meetings, during which partners discussed ambient monitoring efforts and results.

Priority Watershed Name: Oakland Bay & Johns Creek

Figure 7.Map showing arial view of Oakland Bay and Johns Creek

Implementing: Puget Sound Partnership Action Agenda

Nonpoint work within these sub-watersheds is funded by a National Estuary Program (NEP) grant that is overseen and administered through the Washington Department of Health. Nonpoint staff work with local partners, Mason County Environmental Health Department, Mason Code Enforcement, Mason Conservation District, Squaxin Island Tribe, as well as landowners to reduce nonpoint sources of bacteria pollution originating from agricultural activities.

Summary/Context Info:

Oakland Bay is a shallow, poorly flushed embayment connected to the South Puget Sound, with a history of poor water quality and an extremely productive shellfish industry. Because of its poorly flushed nature, shallow waters, and increasing population, Oakland Bay continues to experience declining water quality. Johns Creek enters Oakland Bay at its northwestern shore. Multiple water quality parameters in Johns Creek have impairments, including bacteria, temperature, and dissolved oxygen. Nonpoint staff have identified agricultural operations and residential onsite septic systems that are impacting the water of both Oakland Bay and Johns Creek.

Priority Actions Completed in 2022:

Education and Outreach

- **Education information communicated:** Staff presented educational information through nine communications to landowners. Communications included technical assistance letters, phone calls, site visits, and door hangers.

Financial Assistance

- **Offers of financial assistance resources:** Staff gave information regarding opportunities for landowners to access financial assistance resources through five correspondences. Staff also regularly provided information regarding grant opportunities to local partners.

Partner Coordination

- **Partner meetings:** Staff participated in 4 PIC meetings and 3 additional multi-partner meetings to coordinate efforts to address specific pollution concerns. Staff attended Mason CD board meetings to provide updates and serve as a bridge between the two agencies.

Pollution Identification/Watershed Evaluating

- **Complaint/Referral response:** Staff coordinated with local partners while conducting nine watershed evaluations and seven site visits to identify sources of pollution.

Compliance Activities

- **Technical assistance and compliance follow-through:** Staff issued two Technical Assistance letters, one Warning Letter, delivered two door hangers, and routinely conducted evaluations of sites of concern.

Monitoring Activities

- **Investigatory sample collection:** Staff collected samples on three separate occasions when responding to complaints or referrals to evaluate bacteria pollution from sites of concern.

Priority Watershed Name: Skokomish Valley & Annas Bay

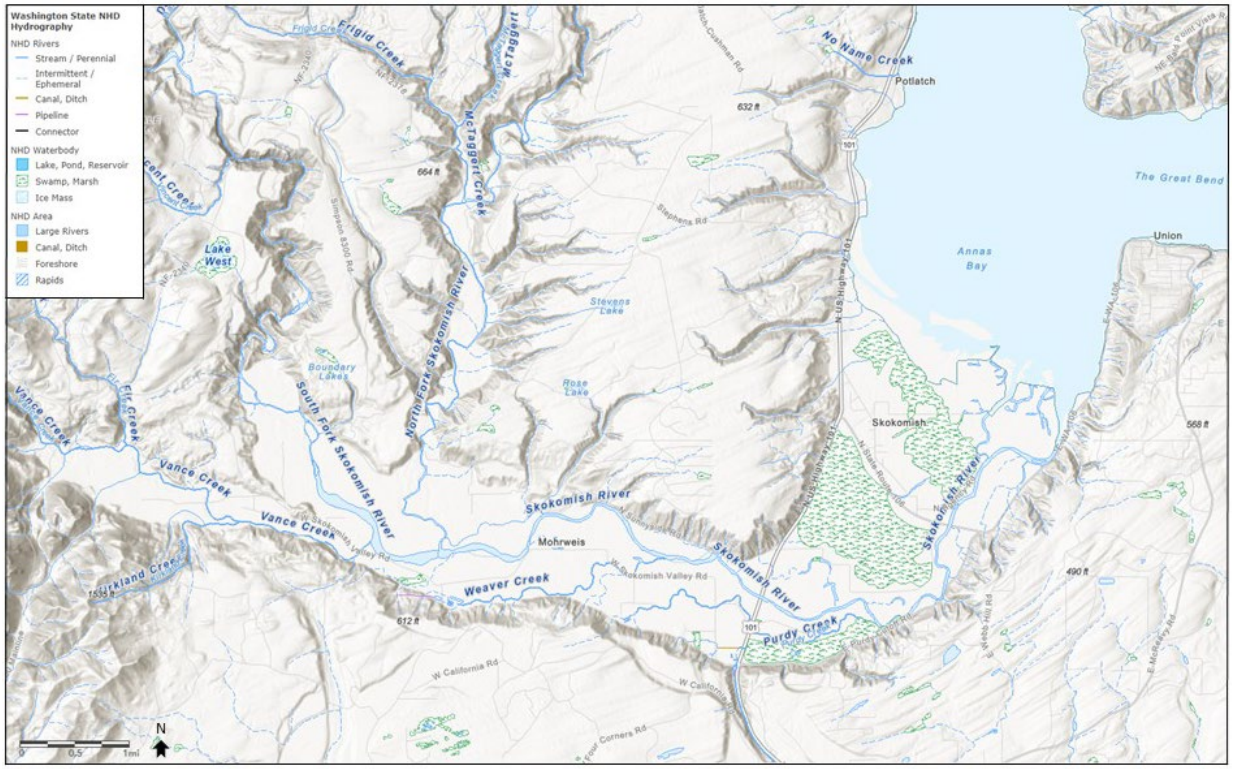

Figure 8. Map showing Skokomish River watershed and Annas Bay.

Implementing: Puget Sound Partnership Action Agenda

Nonpoint work within this watershed is funded by a National Estuary Program (NEP) grant that is overseen and administered through the Washington Department of Health. Nonpoint staff work with local partners, Mason County Environmental Health Department, Mason Code Enforcement, Mason Conservation District, Skokomish Tribe, and landowners to reduce nonpoint sources of bacteria pollution originating from agricultural activities. After responding to multiple ERTS and partner referrals within these watersheds/sub-watersheds, staff observed multiple parcels where livestock operations have had the potential to contribute to bacteria pollution. Furthermore, risk to shellfish growing areas downstream from bacteria pollution continued to increase, increasing the risk of growing area closures.

Summary/Context Info:

The Skokomish River and the Delta, known as Annas Bay, boasts hundreds of acres of tidal flats used for shellfish harvest, and are home to numerous species of fish and wildlife including ESA-listed Coho and threatened stocks of Chinook. Flooding events in the Valley magnify the water quality impacts of livestock operations and Ecology is working to address the pollution inputs of this small community.

Priority Actions Completed in 2022:

Education and Outreach

- **Education information communicated:** Staff presented educational information through 17 communications to landowners. Communications included technical assistance letters, phone calls, site visits, and in-person conversations.

Financial Assistance

- **Offers of financial assistance resources:** Staff gave information regarding opportunities for landowners to access financial assistance resources through 16 correspondences. Staff also regularly provided information regarding grant opportunities to local partners on occasions.

Partner Coordination

- **Reported concerns:** Nonpoint staff communicated and coordinated with area partners to identify appropriate responses to four ERTS complaints.
- **Partner Meetings:** Staff participated in 4 PIC meetings and 3 additional multi-partner meetings to coordinate efforts to address specific pollution concerns. Staff attended Mason CD board meetings to provide updates and serve as a bridge between the two agencies.

Pollution Identification/Watershed Evaluation:

- **Complaint/Referral Response:** Staff coordinated with local partners while conducting 12 watershed evaluations and three site visits to identify sources of pollution.

Compliance/Technical Assistance Activities

- **Technical Assistance:** Ecology staff sent two technical assistance letters to Skokomish Valley agricultural property landowners adjacent to impaired waters.
- **Site visits:** Ecology staff made over 2 dozen observations in the field and conducted 2 site visits in the Valley.
- **Follow-up letters:** Ecology sent 1 follow-up letter to a landowner in the Valley.

Monitoring Activities

- **Pollution Identification and Correction (PIC) coordination:** Staff participated in four Clean Water District meetings, as well as regular informal staff-to-staff meetings, during which partners discussed ambient monitoring efforts and results.

Priority: Nisqually River & Ohop Creek

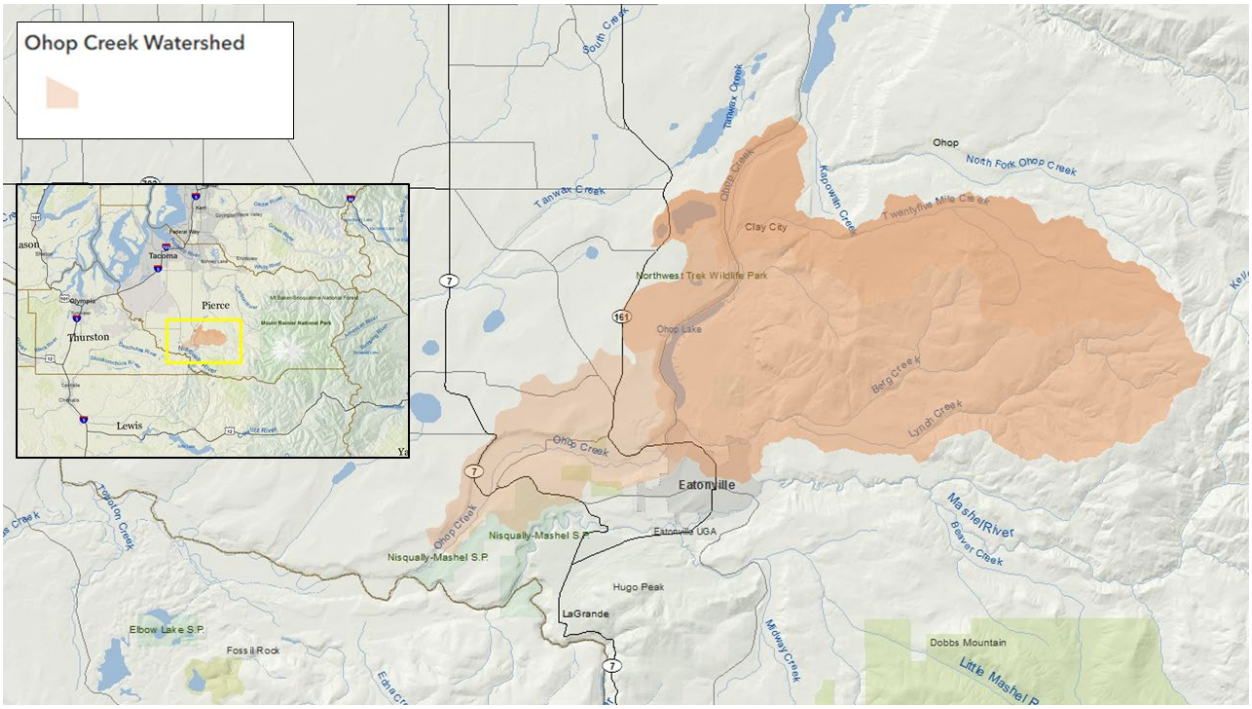

Figure 9. Map showing Nisqually and Ohop Creek

Implementing: Nisqually River Watershed Bacteria and Dissolved Oxygen TMDL

Summary/Context Info:

As one of the least degraded major watersheds in the Puget Sound, the Nisqually River and its tributaries continue to be critically important spawning and rearing habitat for ESA-listed salmonid species. In 2005, the EPA approved a TMDL in the Nisqually River watershed and the Henderson Inlet basin. In this study, Ohop Creek was identified by Ecology to be a primary area of interest for fecal bacteria reduction. Partners: Nisqually Land Trust, Nisqually River Council, Nisqually Indian Tribe, Pierce Conservation District, and Pierce County Public Works.

Priority Actions Completed in 2022:

Education and Outreach

- **Ohop Valley outreach:** Within the Ohop Valley focus area, staff sent letters to and subsequently communicated with three Ohop Valley landowners.
- **Water quality field trip:** Staff ran a pH and turbidity station at a field trip intended to teach fourth graders about water quality in their watershed.

Financial Assistance

- **Communicated with landowners about financial assistance opportunities:** Ecology worked with landowners in attempts to connect them with financial resources for BMP installation.

Partner Coordination

- **Coordination with Pierce Conservation District:** Ecology attended Pierce Conservation District (CD) meetings monthly and provided updates on nonpoint work. Ecology met with Pierce CD farm planners two times to discuss sites of concern and plan next steps for contact. Ecology conducted two site visits with Pierce CD staff.
- **Partner meetings:** Ecology attends monthly Nisqually River Council meetings to receive information from partners on projects in the Nisqually watershed. Additionally, Ecology has developed a strong relationship with the Nisqually Land Trust, an organization that has acquired multiple parcels in the watershed.

Pollution Identification/Watershed Evaluation:

- **Documentation:** Ecology identified sites of concern and documented observations in the Nonpoint Investigation database.
- **Water quality sampling:** Ecology staff collected samples to assess two drainages that flow into Ohop Creek. Three samples were collected and analyzed.
- **Watershed assessment:** Staff completed 11 watershed assessments where sites of concern were identified, and on-site improvements or continued noncompliance were documented.

Compliance/Technical Assistance Activities

- **Provided technical assistance to area livestock owners:** Ecology worked with three landowners in the Ohop Valley to provide technical assistance on changes to current land use practices.
- **Compliance:** Ecology issued one penalty, completed two site visits, and sent one follow up letter.

Monitoring Activities

Completed

- **Water quality sampling:** Ecology identified three drainages to be sampled in the future to assess impacts to Ohop creek. One sampling event was conducted late in 2022.

Priority Watershed Name: Lacamas Creek

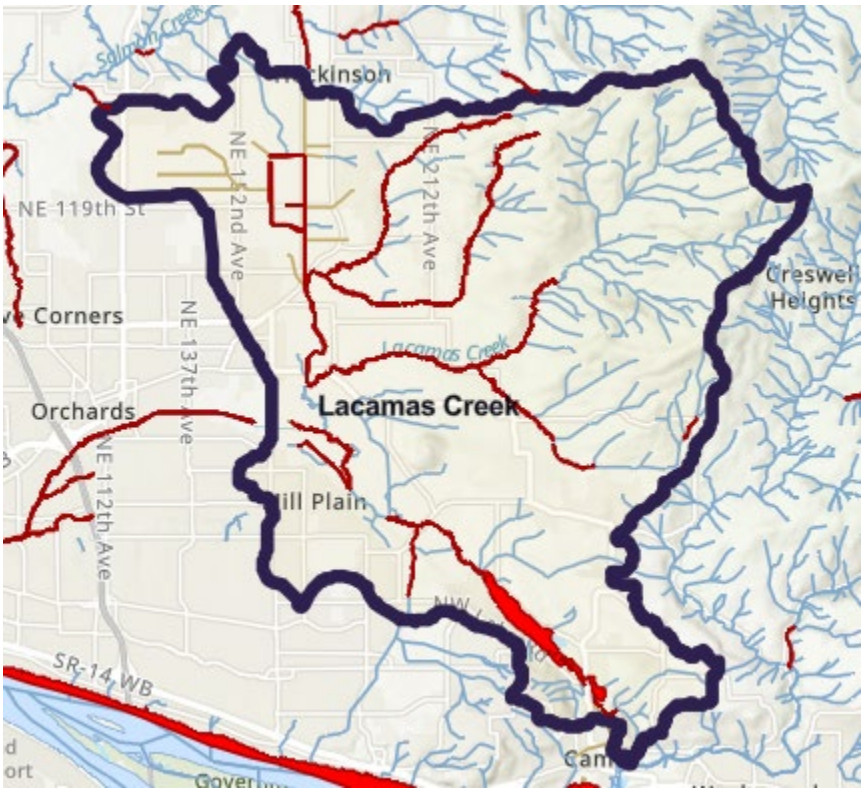

Figure 10. Map of the Lacamas Creek watershed and surrounding areas.

Lacamas Creek ARP

Summary/Context Info:

The Lacamas Creek watershed has a number of water quality impairments including temperature, bacteria, dissolved oxygen, and pH. Among the concerns that result from these upstream impairments are the persistence of algal blooms and invasive aquatic species in Lacamas Lake. Water quality samples were collected in the Lacamas watershed during the fall of 2021; Ecology will use this information to develop a source assessment report in order to identify critical areas for water quality improvement. Nonpoint staff will work with partners (Clark County Public Health, Clark County Clean Water, City of Camas, WSDA, Watershed Alliance, Clark CD, and NRCS) to develop outreach materials that describe water pollution issues in the watershed, and to assist with identifying properties in need of BMPs.

Priority Actions Completed in 2022:

Education and Outreach

- Poop Smart Clark Pollution Identification and Correction (PIC) group began developing a plan for outreach.

Financial Assistance

- Clark CD received funding through NRCS Regional Conservation Partnership Program to provide financial assistance to properties needing improvements as identified by Poop Smart Clark PIC workgroup partners.

Partner Coordination

- Ecology staff attended monthly Clark CD meetings and Poop Smart Clark PIC group meetings to coordinate and collaborate on focus areas and technical assistance outreach activities.

Pollution Identification/Watershed Evaluation

- Ecology staff conducted one watershed evaluation, noting areas that need riparian vegetation.

Compliance/Technical Assistance Activities

- Compliance investigations within the watershed in 2022 included septic installation within a wetland, horses in a flooded pasture, construction erosion issues, and concerns over a stormwater retention pond.
- One large dairy closed its business operations within the watershed. WSDA turned over regulatory compliance inspections to Ecology staff. The dairy waste lagoon effluent was land applied at agronomic rates on dedicated fields.

Monitoring Activities

- No additional water quality sampling activities occurred in 2022.

Northwest Regional Office and Bellingham Field office

Ecology's Northwest Region Office has nearly 50 TMDLs, Alternative Restoration Projects, and Watershed Evaluations in development or completed.

The primary tools for accomplishing implementation include the following strategies:

1. Participate in multiple salmon recovery forums (executive committee meetings, technical workgroups, implementation committees, etc.) to guide implementation in areas of shared interest (riparian plantings, cold water refuge creation, etc.).

2. Participate in stakeholder groups focused on TMDL implementation, including:
   - Green the Green: A King County-led group that focuses on implementing the Green River Temperature TMDL
   - King County Fish, Farm, Flood: A King County-led group focusing on multi-benefit projects in the Snoqualmie Watershed with special emphasis on participation in the Buffer Task Force and Implementation Oversight Committee.

- Sustainable Lands Strategy: a Snohomish County-led group focusing on multi-benefit (Fish/Farm/Flood) efforts in both the Snohomish and Stillaguamish Watersheds.
- Community Floodplain Solutions: a Snohomish County-led group also focused on multi-benefit efforts aimed for now at the lower Skykomish Watershed. This is a relatively new group that we started participating with in 2021.
- Stillaguamish and Snohomish Local Integration Organizations: These groups help the Puget Sound Partnership build the Action Agenda and prioritize local water cleanup and salmon recovery projects supported by National Estuary Program (NEP) funding.
- PIC programs focusing on the lower Stillaguamish Watershed, and Vashon Island marine areas, and Poverty Bay (limited participation)
- Whatcom Clean Water Program (Birch Bay, Drayton, and Nooksack basins)
- Clean Samish Initiative (CSI): a coalition of federal, state, and county governments, Indian tribes, Non-Governmental Organizations, shellfish growers, and private citizens dedicated to reducing fecal coliform pollution in the Samish Bay Watershed.

3. Encourage and guide participation in Ecology's Combined Funding Program to support implementation of BMPs that will move us closer to our WQ goals.

4. Conduct targeted water quality monitoring when there is a need for watershed characterization or if the information is needed to help identify potential sources of pollutants.

5. Provide outreach and education, along with technical assistance, in watershed evaluation areas, and to landowners when responding to water quality complaints.

6. Conduct watershed assessments to identify and correct nonpoint pollution sources generated by land use practices that may compromise surface water quality.

7. Respond to complaints. Our staff receive hundreds of referrals through our Environmental Reporting Tracking systems (ERTS) on an annual basis. Our staff also conduct dozens of in person follow ups meetings, along with phone calls, and technical assistance letters to landowners. Most non-point pollution issues require coordination with local government and conservation districts for investigation and response.

Priority Watershed actions and other specific implementation efforts associated with NWRO water cleanup activities are discussed below.

Green River Watershed TMDLs:

We are actively implementing two TMDLs in the Green River watershed: the Green River Temperature TMDL (2011) and the Newaukum Creek Temperature TMDL[10] (2011). Both studies found that lack of adequate riparian vegetation contributes to temperature impairments in

[10] Newaukum Creek is a tributary of the Green River. The two TMDLs were developed concurrently.

these water bodies. As a result, implementation has focused on riparian restoration by removing invasive species and planting native vegetation.

Currently, Ecology is funding two major riparian restoration projects along the Green River that are implemented by King County basin stewards:

- Horsehead site in the Lower Green – project will restore 8.5 acres of riparian buffer by planting native vegetation along 2,400 linear feet of river within a 165-foot buffer.
- Flaming Geyser site in the Middle Green – project will restore 14 acres of riparian buffer.

In addition to Ecology funding, every year the King County Flood Control District funds riparian restoration projects that have been prioritized in King County's implementation plan for the Green River TMDL, Regreen the Green[11]. Currently the Flood Control District and WRIA 9 Salmon Recovery Group allocate $500,000 annually towards riparian restoration projects along the Green-Duwamish River and its tributaries.

In Newaukum Creek, Ecology is funding one grant that King County is using to plant native riparian vegetation on seven properties, encompassing 36 acres of restored riparian habitat.

Snohomish Watershed TMDLs

Our Snohomish Watershed focused staff participate in several different work groups directing and supporting water quality and salmon recovery efforts in the Snohomish Watershed where we are implementing five approved TMDLs. Our implementation efforts include our non-point and stormwater grant specialist managing dozens of grants in this large watershed comprised of rural, residential, and urban areas.

Our Pilchuck River Temp/DO TMDL (tributary to Snohomish River) was published in December 2020, and dialogue with Snohomish County and WDNR on augmenting summer baseflows in the Pilchuck River began in 2021. We began this work with initial discussions with Snohomish County, the Tulalip Tribes, and several representatives of WDNR. We analyzed output from the Beaver Intrinsic Potential model to assess restoration potential of Snohomish River subbasins and began agency-to-agency dialogue on coordinating with WDNR on their Snohomish Watershed "Trees to Seas" Initiative. Our meetings with Snohomish County started the conversation on the strategic locating of stormwater retrofit opportunities to increase Pilchuck River summer baseflows. These proposed projects are new concepts that we will explore further as the opportunity arises and our implementing partners have the opportunity to use available resources (including Ecology funding sources) to get pilot projects developed and funded.

[11] https://www.govlink.org/watersheds/9/pdf/GreenRevegStrategyPlan-Oct2016-Final.pdf

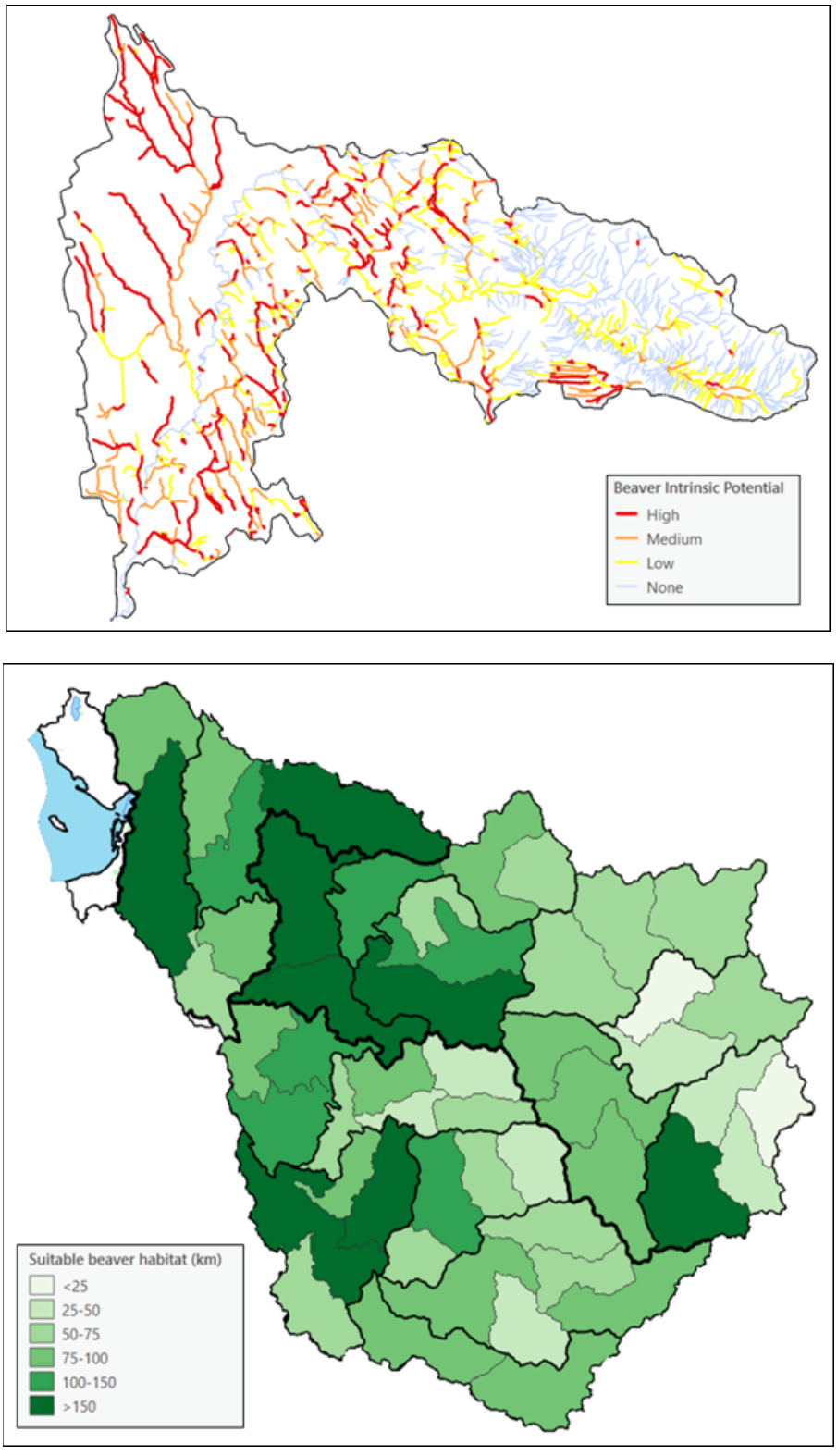

Figure 11 Beaver Intrinsic potential model. As part of the Pilchuck Temperature and Dissolved Oxygen TMDL Implementation Plan, we analyzed the beaver intrinsic potential (BIP) model to assess which areas of the Pilchuck watershed might be most suitable.

Lake Whatcom TMDL

As part of implementation the Lake Whatcom TMDL, Whatcom County and the City of Bellingham continues to control non-point sources in Whatcom County by voluntarily applying relevant portions of the MS4 program required under their NPDES stormwater permit. Approximately 88% of the watershed has nonpoint sources. The first draft of Appendix 2 of the MS4 NPDES permit will be ready by April 1, 2023. As permit holders, the City of Bellingham, and Whatcom County will review the draft and work with Ecology to finalize the language for permit renewal by 2024. Jurisdictional non-point work is coordinated through the Lake Whatcom Management Program and includes a prescriptive work plan updated on a five-year cycle.

The TMDL implantation plan adaptive management strategy includes a TMDL model update to reduce uncertainty and help guide implementation efforts. The model update incorporates 17 year of runoff data from upland sources to the lake and 13 years of lake data. The Lake Whatcom Monitoring Program agreed upon modeling scenarios that were similar to the initial TMDL model. One addition to the model output is to include a phosphorus loading rate and DO response curve to assess critical phosphorus loading levels as a function of TMDL attainment.

Clean Samish Initiative (CSI) and Padilla Bay Tributaries TMDL

As part of the Clean Samish Initiative, Ecology staff in both the Bellingham Field Office and Northwest Region Office worked with Skagit County Public Works, the Skagit Conservation District, and Washington State Department of Agriculture to identify and correct sources of fecal coliform pollution in the Samish basin.

Working collaboratively with Skagit County staff, we updated our database with current site conditions for every known livestock property in the Samish basin and quantified the data with numbers and types of livestock. Jointly, Ecology and County staff regularly conduct source identification sampling and effectiveness monitoring, windshield surveys, and site visits. This level of coordination helps to build trust and strong relationships among our PIC partners.

Our Padilla Bay Freshwater Tributaries Bacteria TMDL was published in December of 2020. Based on the results of the TMDL, as well as Skagit County monitoring results in the Padilla Bay area, the Skagit County PIC program efforts have expanded into the Padilla Bay tributaries watersheds. Ecology staff participate in the monthly PIC meetings to coordinate landowner outreach and technical assistance when sources of pollution are identified in Padilla Bay.

Based on high bacteria numbers documented during the development of the TMDL, site specific monitoring is ongoing in the Little Indian slough portion of the Padilla Bay watershed to identify and reduce bacterial pollution. The focus area of the data collection is the commercial/industrial area located at the headwaters of the slough where high concentrations have been documented. Based on the monitoring efforts and coordination between the TMDL lead and permit managers, BMPs and permit conditions are being implemented to reduce bacterial pollution.

Table 12.Number of landowner contacts, warning letters and notices of violation in the Samish and Padilla Watersheds

Areas of Focus	Contacts with Property Owners	Warning Letter	Notices of Violation
Samish	9	0	0
Padilla	11	0	0

Additional activities included:

- Working with the Skagit Conservation District and landowners to ensure that BMPs implemented in the past continue to be maintained, and that adaptive management occurs when need to protect water quality.
- Coordinating water-sampling efforts with Skagit County, WSDA, Samish Tribe, and volunteers to track sources of fecal coliform pollution in the Samish and Padilla Bay Watersheds during runoff events.
- Coordinating with Washington Department of Agriculture (WSDA) and Skagit County on aerial surveys to identify high-risk site conditions that are not visible from public roads.
- Providing quarterly updates to the CSI executive committee and participating in the CSI Project Development Team, comprised mainly of field staff from Ecology and our partners from Skagit County, WSDA and Skagit CD.

South Skagit Bay

The South Skagit Bay Watershed Evaluation Planning effort was finalized in late 2017 after meetings with both the WA State Water Quality and Agricultural Advisory Committee and major agricultural, government, and business stakeholders in Skagit County. We coordinated sampling efforts with the Stillaguamish and Tulalip Tribe and Snohomish County to fill in data gaps and not overlap efforts occurring as a result of the Stillaguamish PIC Phase III program.

In 2022, we continued our watershed evaluation work which included the Old Stillaguamish channel area, and the Big Ditch/Maddox Slough watershed. Much of this work focused on staff from BFO and NWRO running a water sampling program to characterize watershed bacteria levels and assist in identifying sources of pollutants. Ecology also developed a new QAPP with support of EPA staff to include microbial source tracking (MST) as part of our South Skagit Bay work starting in spring of 2022. Outreach to stakeholders and the public included attending Stillaguamish PIC Phase III team meetings, meetings with stakeholders to discuss sampling results and exploring the use of MST sampling in the project area. In both 2021 and 2022, two South Skagit Bay meetings were hosted by Ecology staff to share the results of the monitoring effort and gather feedback from local stakeholders.

Additional activities included:

- Monthly ambient water quality sampling at 13 sites with additional source identification monitoring at 5 sites.
- Additional storm event sampling at 10 sites began in August 2021. Storm event sampling continues into 2023.
- MST samples were collected at eight sites, with a total of 36 MST samples collected by the end of 2022.
- Nonpoint Specialist continued performing roadside evaluations during the wet season and entering data and observations into the "Collector App."
- Livestock rearing properties with an elevated potential to pollute were highlighted for future technical assistance. Onsite septic systems in the Old Stillaguamish drainages and selected areas of Port Susan were evaluated for the potential to pollute, mapped, and discussed at Stillaguamish PIC III meetings.
- In late Summer of 2022, Ecology developed and mailed an informational post card sent to 633 property owners in the South Skagit Bay project area.

As we identify priority high risk properties, we plan on contacting property owners as appropriate, and offering technical assistance. We will rely on local conservation districts to assist landowners when parties are willing. We will also continue to characterize local water quality through regular monthly sampling in addition to separate storm event sampling at new and key sampling locations.

Lower Skagit Tributaries

In 2019, Ecology's Water Quality Program in the Northwest Region office (NWRO) began a targeted effort to revitalize implementation of the Lower Skagit River Tributaries Temperature TMDL (approved by EPA in 2008). Our goal is to increase the pace of riparian buffer restoration. Ecology convened an advisory group (local government units, tribes, non-profit organizations, conservation organizations, and stakeholder groups) to develop a strategy with the intent to renew efforts and refocus attention on surface water temperatures in the TMDL area. Ecology published the results of this effort in March 2020 in Lower Skagit Temperature Implementation Strategy,[12] which has guided our ongoing efforts described below.

Outreach & Education: In 2020, Ecology worked with interested outreach partner organizations to perform a public survey to gauge Skagit community knowledge of and interest in the local water temperature conditions and concerns. The results guided our creation of the "Skagit Valley's Warming Waters[13]" Storymap, which was launched in May 2021 as part of the Skagit Water Weeks event. We went on to produce an educational four-part video series[14] on water temperature conditions and solutions in the Skagit River Watershed, released in August 2022,

[12] https://apps.ecology.wa.gov/publications/documents/2010010.pdf
[13] https://storymaps.arcgis.com/stories/33b9d4bb77a84fa9b3c9445d9f03c97c
[14] https://ecology.wa.gov/Blog/Posts/August-2022/New-videos-explain-how-to-keep-the-Skagit-River-wi

and a companion informational flyer so that partner organizations can share out the video and storymap links at community events.

Since 2021, Ecology has funded a 'direct implementation' grant project with the Skagit Conservation District to conduct community based social marketing (CBSM) research and scope additional implementation efforts. The social research included focus groups and interviews with individuals to identify barriers and motivators to riparian restoration activities. Participants were selected and nominated from both restoration practitioners and local agricultural organizations. The research findings are being used to investigate the use of incentives, easements, and other programs to increase riparian habitat restoration. The CBSM project deliverables (Summary Social Research report and the CBSM Campaign Plan) are complete and will be made available soon. Note that this research is also being used by the Washington State Conservation Commission's Skagit project and their potential future grant program efforts.

Photo NWRO's storymap of "Skagit Valley's Warming Waters[15]" tell the story of how and why Skagit waters are increasing in temperature and solutions for the problem.

Data Collection & Access to Data: In coordination with the Upper Skagit Indian Tribe and Drainage District 21, Ecology collected water quality data in 2021 and 2022 on Turner Creek, one of the lower Skagit tributaries in the TMDL area, to evaluate the effectiveness of a drainage and fish habitat enhancement project. Data is currently under review. We are also investigating the possibility of directing grant funds toward the purchase and installation of several permanent water quality telemetry stations, to be placed in Lower Skagit Tributaries temperature impaired streams. If installed, the gauges will be operated and maintained by Skagit County. This work is in response to partner requests and community feedback stating the need for increased availability of temperature data.

Ecology and partners are also scoping potential updates to an existing database housed by the Skagit Watershed Council that contains Skagit riparian restoration information. Improvements

[15] https://storymaps.arcgis.com/stories/33b9d4bb77a84fa9b3c9445d9f03c97c

would increase accessibility for restoration partners, improve function, and increase data inclusion. In addition, a public facing map and data dashboard/interface would be created to increase availability of temperature data to the public and to increase awareness of and celebrate the success of completed restoration work.

Looking Ahead: Ecology remains committed to partnering with the wide array of governments and organizations working in the lower Skagit tributaries to improve coordination, increase landowner awareness, and remove barriers to riparian restoration.

The Upper Skagit Indian Tribe and Skagit County are developing an East Fork Nookachamps Watershed plan, one of the lower Skagit tributaries in the TMDL area, that will include reach-scale project sequencing and planning. Ecology will support the effort through technical assistance, data analysis and field work.

Ecology will continue to work with interested partners to scope a pilot incentive program based on the CBSM research findings. The goal for this effort is to target efforts in one or more of the identified tributaries where riparian restoration incentives would be piloted in order to evaluate the effectiveness of such a targeted investment on reach-scale participation in riparian restoration programs.

Whatcom Clean Water Program

In cooperation with Whatcom Clean Water Program (WCWP) partners, Ecology nonpoint staff worked in the Nooksack River, Jordan Creek, Sumas River, and Drayton harbor watersheds to identify and address nonpoint sources of pollution.

Table 13. Number of property owners contacted in the Nooksack River and Drayton Harbor Watersheds.

Areas of Focus	Contact with Property Owners	Warning Letter	Notices of Violation	Administrative Order
Nooksack River/Portage Bay/Drayton Harbor	53	0	0	1

We coordinated closely with WCWP partner agencies to identify confirmed or suspected pollution sources, contact landowners, and improve livestock management practices in our watersheds. Strategic planning occurs annually involving sampling plan updates, coordination, information sharing, communications, and areas of improvement or direct needs. During winter, we focused on source identification and providing technical assistance to livestock operators. During the dry months, staff's focus shifted to follow-up on problems identified during the rainy season, surveying conditions, and developing longer-term strategy along with our PIC partners.

In August 2018, BFO worked with our WCWP partners, British Columbia Ministry of Environment and Climate Change, and Ministry of Agriculture, under the title "Nooksack River Transboundary Technical Collaboration Group", to implement our three-year plan to address high concentrations of fecal coliform bacteria crossing the border in Bertrand and Fishtrap creeks. Between August 2018 and July 2021, we implemented the Three-Year Work Plan. During this period BC Ministry of Environment implemented components of the plan, including monitoring water quality, educating property owners, identifying sources of pollution, implementing pollution prevention practices, and conducting enforcement when necessary. The final version of the Nooksack River Transboundary Technical Collaboration Group 2020-2021 Annual Report was completed in July 2021. The Technical Collaboration Group (TCG) report summarizes progress during the three-year project but concludes that resources for BC participants will not be available after July 31, 2021. Some limited monitoring will occur, but most other monitoring will be conducted by volunteers. Since July 2021, high concentrations of fecal coliform bacteria continue to occur during heavy rains and runoff events at the border stations. Project partners lead by the BC Ministry of Environment are drafting a study to quantify bacteria loading from the Canadian portion of the watershed and the effect of water quality in Portage Bay. The Transboundary work may continue to some degree through project partners under the Shared Waters Alliance, which is an informal working group that primarily addresses bacteria pollution in the marine and fresh waters shared by Canada and the United States along the BC and WA nexus.

Lake Whatcom TMDL

As part of implementation the Lake Whatcom TMDL, Whatcom County and the City of Bellingham continues to control non-point sources in Whatcom County by voluntarily applying relevant portions of the MS4 program required under their NPDES stormwater permit. Approximately 88% of the watershed has nonpoint sources. The first draft of Appendix 2 of the MS4 NPDES permit will be ready by April 1, 2023. As permit holders, the City of Bellingham, and Whatcom County will review the draft and work with Ecology to finalize the language for permit renewal by 2024. Jurisdictional non-point work is coordinated through the Lake Whatcom Management Program and includes a prescriptive work plan updated on a five-year cycle.

The TMDL implantation plan adaptive management strategy includes a TMDL model update to reduce uncertainty and help guide implementation efforts. The model update incorporates 17 year of runoff data from upland sources to the lake and 13 years of lake data. The Lake Whatcom Monitoring Program agreed upon modeling scenarios that were similar to the initial TMDL model. One addition to the model output is to include a phosphorus loading rate and DO response curve to assess critical phosphorus loading levels as a function of TMDL attainment.

Nooksack River bacteria TMDL

Implementation of the Nooksack River bacteria TMDL continues through involvement from local project partners primarily conducted through the Whatcom Clean Water Program (WCWP):

- Whatcom County
- Whatcom County Health
- Whatcom County Conservation District
- Cities of Ferndale and Lynden
- Lummi Nation
- Nooksack Tribe
- British Columbia
- WA State Department of Agriculture Dairy Nutrient Management Program
- WA State Department of Health Shellfish Program

Ecology coordinates and conducts stormwater sampling along with routine ambient monitoring to identify pollution sources. These data are shared through the WCWP, which represents a local PIC component. Consistently high bacteria concentrations have been observed at Canadian-United States boarder from fall 2022 through winter during both wet runoff conditions and dry conditions with no runoff. The WCWP is engaged with Canadian workgroups and governmental organizations to find and correct pollution sources that originate in Canada to comprehensively address the Nooksack basin.

Pacific Northwest National Laboratory (PNNL) in partnership with the EPA and the northwest regional PIC program developed a Salish Sea Model with a fecal bacteria module (SSM-fb). The object is to develop a fine-scale circulation model to characterize the currents, physical constituents, and chemistry of Bellingham Bay, which includes Lummi and Portage Bay. The fine-scale circulation model will be used to predict the transport and fate of fecal bacteria. The model will be used to inform PIC strategies to reduce upland sources of bacteria loading and predict bacteria levels in the bay in response to loading.

Local stake holders are interested in characterizing the relationship between fecal coliform (FC) and Escherichia coli (*E. coli*) and how to apply the relationship to long-term data, the water quality criteria, and compare results with water quality from Canada. The WCWP has collected FC samples for many decades with recent increased efforts to collect *E. coli*, while Canada has collected *E. coli* for decades. Many methods have been employed to describe this relationship including ratios, correlations, and regressions. Ecology recently applied Type 2 (Model 2) simple linear regression to ambient data collected in the Nooksack Basin and presented this to local stakeholders with promising acceptance. Type 2 modeling and analysis has already been applied to the Whatcom Creek bacteria TMDL that will be submitted to EPA for approval mid-2023.

South Fork Nooksack temperature TMDL

The South Fork Nooksack TMDL was approved by the EPA in 2020. Temperature impairments were quantified and addressed by riparian shading, which is implemented through nonpoint source activities. The TMDL incorporates an EPA climate change pilot project. Riparian restoration continues along with novel approaches to reducing stream temperatures through improved upland timber harvesting and the development of a community forest. Funding Availability for Puget Sound Action Agenda - Climate Resilient Riparian Systems Lead is a 2022 Action Agenda item. The grant provides funds to voluntarily protect and restore priority watersheds, with an application deadline of March 31, 2023. Ecology will gain a better understanding of how the project Lead shall act among local and regional stakeholder and how it applies to TMDL implementation.

The TMDL did not quantify the effects of instream habitat creation such as logjams and floodplain connection, which has yet to be done for TMDL application since shade is the surrogate measure for temperature. The climate change pilot project includes a quantitative and qualitative analysis of on temperature through instream restoration. The direct link of instream habitat restoration and resulting temperature effects shall be examined under adaptive management. This TMDL complements ongoing efforts in the salmon recovery.

Central Regional Office

Ecology's Central Region Office (CRO) covers seven counties (Okanogan Douglas, Chelan, Kittitas, Yakima Benton, and Klickitat) on the east side of the Cascade mountains spanning from Canada to Oregon Nonpoint staff frequently coordinate with local partners, including conservation districts, Local Health districts, municipalities, county and state government agencies, and Tribes.

Through attendance at monthly conservation district board meetings, nonpoint staff are able to further develop cooperative relationships with CDs. Because CD's are the trusted local technical assistance resource for landowners needing to make improvements, these relationships consistently prove to be invaluable for implementing water quality improvement BMPs.

Through in-person site visits, Phone contact and technical assistance letters nonpoint staff provide landowners with information on Water Quality laws and provide referrals to local partners for assistance.

Staff respond to complaints submitted in Ecology's Environmental Report Tracking System (ERTS) and coordinate with local agencies to resolve the issue. 2022 included 70 nonpoint ERTS reports that have been, or are being, addressed with by water quality staff and our local partners. The identified nonpoint source pollution sites of concern are recorded in our Nonpoint Inspection (NPI) database, and we follow up on the individual complaints through ERTS.

For priority watersheds, actions taken in 2022 are highlighted below.

Priority Watershed Name: Lower Yakima River (WRIA 37)

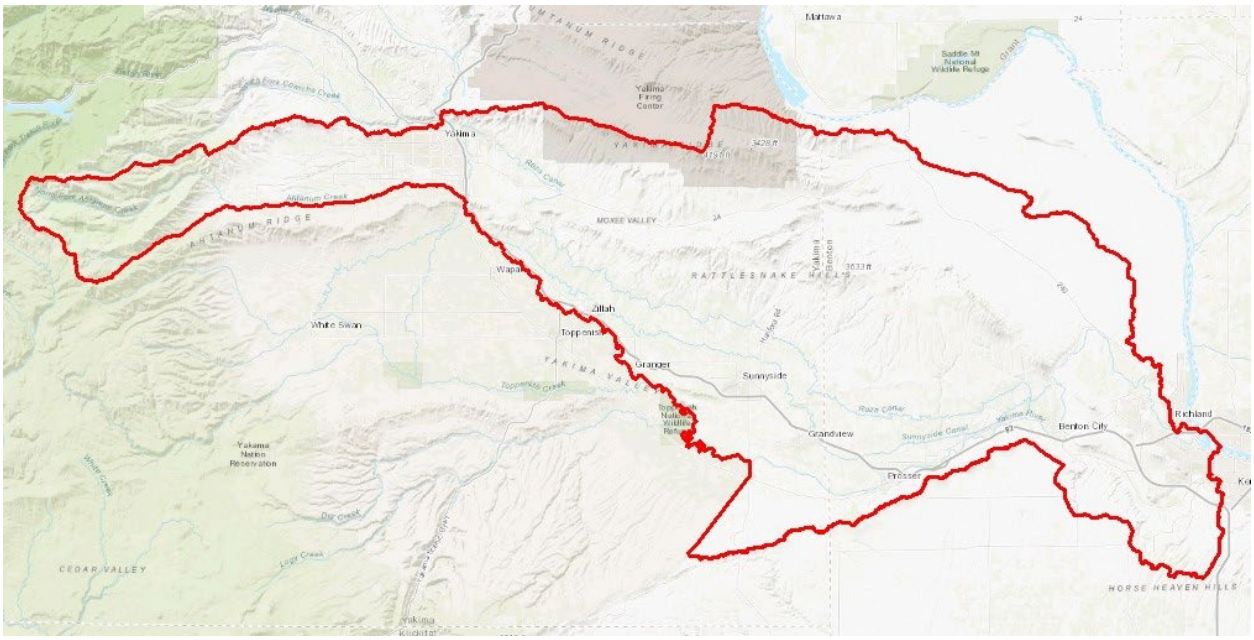

Figure 12. Map of the Lower Yakima River Watershed.

Implementing: Lower Yakima Suspended Sediment TMDL

Summary/Context Info:

The ongoing implementation of the Lower Yakima Suspended Sediment TMDL has greatly improved the water quality discharged to the Lower Yakima River, meeting and maintaining the water quality goals of the TMDL remain as the project goals. The existing strong partnership with Roza and Sunnyside Valley Irrigation Districts is instrumental in the current and future successes seen in this watershed. Ecology WQ staff continue to coordinate closely with irrigation district staff to identify additional opportunities for additional water quality improvement.

Priority Actions:

Financial Assistance

- Financial assistance opportunities are coordinated through the watershed partners including the conservation districts and grant eligible NGOs.

Partner Coordination

- Communication with the Roza and Sunnyside Valley Irrigation districts will be on an as needed basis and depend on field schedules and pollution reports. Contact is monthly or more frequently if needed.

- Communication with the North Yakima, South Yakima and Benton County conservation districts is monthly or more frequently as needed to address pollution sources.

Pollution Identification/Watershed Evaluating

- Ecology staff visit the Lowey Yakima watershed periodically with an emphasis during the irrigation season and, through field monitoring of turbidity, seeking to identify segments that turbidity loading to be addressed through TMDL implementation.
- Coordination with watershed partners, including irrigation districts, conservation districts, and municipalities in the watershed conducting monitoring and working on identification of turbidity sources, focusing on the summer irrigation season.

Compliance Activities

- Initial identification of high turbidity discharges will be shared with the Irrigation Districts to determine if coordinated outreach to land managers can bring the discharge into compliance with TMDL goals through technical assistance.
- Information developed during the field site visits and monitoring will be used to support Ecology's escalation of enforcement as needed.
- Suspended sediment transport is rapid when released to waterways. Field collected data will be relayed rapidly to gain engagement with the responsible landowners and gain water quality improvements in the short term with long term expectations being set forth in documentation.

Monitoring Activities

- Ecology Staff visit the watershed every other week in the irrigation season to conduct visual observations and turbidity sampling with turbidity meter.
- Ecology responds to reports of elevated turbidity from our watershed partners and from the public. These watershed visits will supplement the regular site visits to the watershed.

Additional Activities

- Additional scoping for addressing Temperature or toxics water quality impairments have not been possible due to resource limitations.

Priority Watershed Name: White Salmon River (WRIA 29)

Figure 13. Map of the White Salmon River watershed.

Implementing: Straight to Implementation (STI)

Summary/Context Info:

Ecology is working on a water cleanup project for the White Salmon watershed to address identified water quality impairments for bacteria. Stakeholders in the watershed greeted ecology's entrance into the watershed with interest and support. Some of the local water quality interest extends beyond the bacteria pollution problems.

Priority Actions:

Education and Outreach

- Ecology staff are working with the US Forest Service on outreach to the recreational boaters. Ecology staff work with the USFS staff to have water quality information included in the 2022 USFS recreational boating permit (USFS annual recreational boater permit for Wild and Scenic River segment).
- Ecology staff are worked with Underwood Conservation District, Mid-Columbia Fisheries, and the Yakama Nation on an educational project for the local school district addressing stream health for stream on school property.

Financial Assistance

- Underwood Conservation District is continuing to apply grant funding from Ecology to implement water quality improvement projects in the White Salmon watershed.

Partner Coordination

- Coordination with USFS, Underwood Conservation District (monthly), Yakama Nation, Friends of the White Salmon, Adventure Scientists, Mid-Columbia Fisheries, USGS, Xerces Society and Trout Lake city council.

Pollution Identification/Watershed Evaluating

- Coordinating with CD on Bacterial Sampling plans, filling in data gaps, while preparing the White Salmon Bacteria cleanup plan.
- Ecology conducts complaint responses as needed and have Monthly field visits to the White Salmon watershed for pollution identification work.

Compliance Activities

- No cases needing compliance follow up have been identified. Future cases needing compliance actions will begin with technical assistance and follow Ecology's policies on escalating enforcement.

Monitoring Activities

- The Adventure Scientists volunteer group is conducting monitoring routine monitoring of WQ in the White Salmon. The Adventure Scientists have coordinated with Ecology on development of a Quality Assurance Project Plan.
- Underwood Conservation District is conducting monitoring for bacteria other WQ parameters in the White Salmon Watershed.
- Ecology's Environmental Assessment Program (EAP) is conducting a bacteria loading study in the watershed spanning 2022-2024. This study will reference the current WQ bacteria standard for E. Coli.

Priority Watershed Name: Wilson Creek watershed

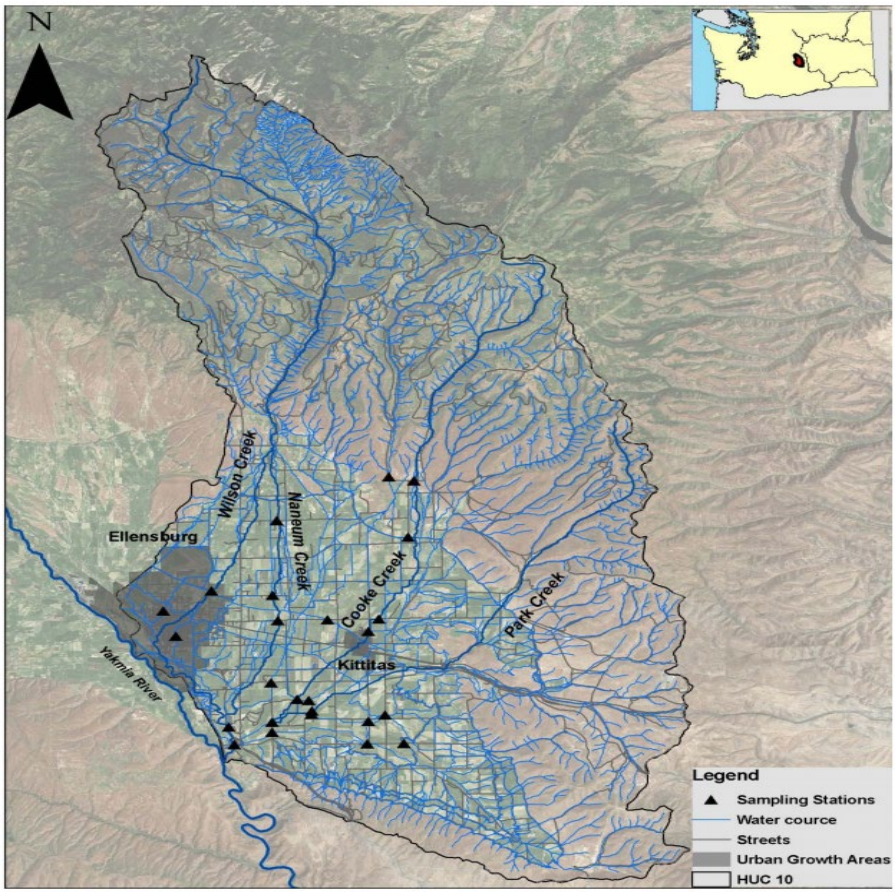

Figure 14. Map of the Wilson Creek watershed.

Implementing: Upper Yakima Basin Suspended Sediment, Turbidity and Organochlorine Pesticide Total Maximum Daily Load and the Wilson Creek Sub-basin Bacteria Total Maximum Daily Load

Summary/Context Info:

Improvements to water quality in the Wilson Creek watershed have been significant but have not met the goals set by the TMDL.

Priority Actions:

Education and Outreach

- Outreach to irrigation district(s) (Spring 2021 and quarterly through 2022)
- Outreach to Kittitas County Conservation District (Spring 2021 and quarterly through 2022)

Financial Assistance

- Financial assistance opportunities are coordinated through the watershed partners including the conservation district and grant eligible NGOs.

Partner Coordination

- Communication with the Irrigation water purveyors will be on an as needed basis and depend on field schedules and pollution reports. Contact is monthly or more frequently as needed.
- Communication with the Kittitas County conservation district is monthly or more frequently as needed to address pollution sources.

Pollution Identification/Watershed Evaluating

- Ecology staff visit the watershed during the irrigation season and monitor of Turbidity in the field to isolate the stream segments that are receiving pollution run off.
- Coordination with watershed partners, including irrigation purveyors and the conservation district, in the watershed monitoring and identifying pollution sources, focusing on the summer irrigation season.

Compliance Activities

- Landowners and land managers identified for the stream reaches receiving pollution loading will receive direct in-person outreach and/or mailings to identifying Ecology's WQ concerns and the need to address continuing pollution loading.
- Information developed during the field site visits and monitoring is used to support Ecology's escalation of enforcement as needed.
- Pollution transport is rapid when released to waterways. Field collected data will be relayed rapidly to gain engagement with the responsible landowners and gain water quality improvements in the short term with long term expectations being set forth in documentation.

Monitoring Activities

- Ecology Staff will be visiting the watershed every other week to conduct visual observations and turbidity sampling with turbidity meter.
- Ecology will respond to reports of elevated turbidity from our watershed partners and from the public. These watershed visits will supplement the regular site visits to the watershed.

Priority Watershed Name: Bonaparte Creek

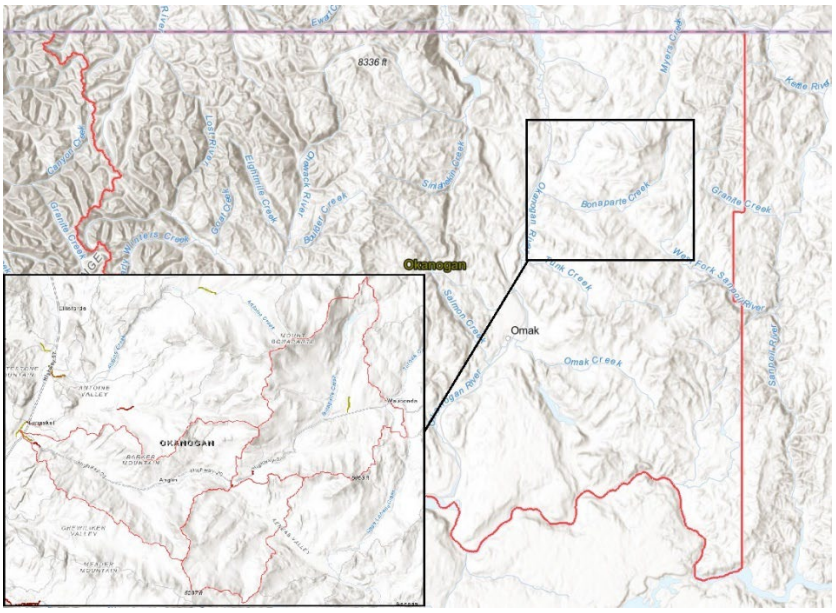

Figure 15. Map of the Bonaparte Creek watershed, WRIA 49.

Implementing: Watershed improvements to address Bacteria and Temperature water quality impairments

Summary/Context Info:

Bonaparte Creek watershed includes bacteria, pH, and temperature listings. Ecology staff are working with the local stakeholders and initiated a watershed assessment program seeking to identify and address sources of contamination in the watershed.

Priority Actions:

Education and Outreach

- Outreach to conservation District (Spring 2022 and quarterly through 2023)

Financial Assistance

- Financial assistance opportunities will be coordinated through the watershed partners including the conservation district and grant eligible NGOs.

Partner Coordination

- Communication with the Okanogan County conservation district is monthly or more frequently as needed to address pollution sources.

Pollution Identification/Watershed Evaluating

- Ecology staff visited the watershed periodically through the year and seek to identify sources of water quality impairment and stream reaches that could be targeted for improvements to protect water quality.
- Coordination with watershed partners, including irrigation purveyors and the conservation district, in the watershed in identifying and monitoring pollution sources.

Compliance Activities

- Landowners and land managers identified for the stream reaches receiving pollution loading will receive direct in-person outreach and/or mailings identifying Ecology's WQ concerns and the need to address continuing pollution loading.
- Information developed during the field site visits and monitoring will be used to support Ecology's escalation of enforcement as needed.

Monitoring Activities

- Ecology Staff visited the watershed periodically to conduct visual observations and conduct turbidity sampling with turbidity meter.
- Ecology will respond to reports of water quality concerns from our watershed partners and from the public. These watershed visits will supplement the regular site visits to the watershed.

Eastern Regional Office

Ecology's Eastern Regional Office continues to focus on TMDL and STI implementation. We prioritized our resources in 2022 toward achieving on-the-ground actions that get to clean water rather than new TMDL development. That said, we put forward three TMDL development projects for scoping in 2022 that have been rescheduled for 2023. Those projects include a multiparameter TMDL for Pataha Creek (a tributary of the Tucannon River), a multiparameter TMDL for Pend Oreille River tributaries (Temperature, Dissolved Oxygen, pH, and Bacteria), and a toxics TMDL for the Pend Oreille River. The 2022 Eastern Region work also included implementation efforts in two recently approved TMDLs. The Little Spokane River DO and pH TMDL was approved in January 2021. Staff continued to implement this TMDL in 2022. The Pend Oreille River Temperature TMDL was approved by EPA in December 2020. This TMDL did not include a comprehensive implementation plan when it was submitted to EPA. In 2022, Eastern Region staff developed an early draft of an implementation plan and intend to finish that plan in 2023.

Much of ERO's implementation work is guided by annual watershed evaluations. Every spring, Eastern regional staff perform watershed evaluations which help identify sources of water quality problems. These surveys assess the health of the streams, document where

improvements have been made, where water quality improvements are still needed, and identify new nonpoint pollution problems. Staff follow up with landowners to offer technical and financial assistance to reduce sources of nonpoint pollution. Formal enforcement is used as a last resort when efforts to assist landowners are unsuccessful. Watershed evaluations are crucial to the work in the eastern region to identify water quality problems and work with landowners to make improvements that reduce pollution sources.

Through these evaluations, priority pollution sites in specific TMDL and STI watersheds are identified. Priorities are set based on considerations of factors that include: Risk to water quality; available evidence of those risks; geographic location; availability of staff and partners to address problem sites, and sometimes the history of land management at a site. The eastern region identified 177 problem reaches in 2022 and prioritized 30 of those for proactive compliance. Offers of technical and financial assistance have been made to the landowners. These sites are in varying stages of project development and implementation. Staff continued to follow-up with sites contacted in previous years that still remain out of compliance. Approximately 30 of the sites already contacted were contacted again in 2022.

In order to implement regional STIs and TMDLs, Ecology sent out 18 warning letters to landowners. We also issued two Administrative Orders to landowners. One order was issued to a livestock operation in the Little Spokane Watershed, and one was issued to a dryland agricultural farm in the Hangman Creek watershed.

Priority Watershed: Little Spokane River

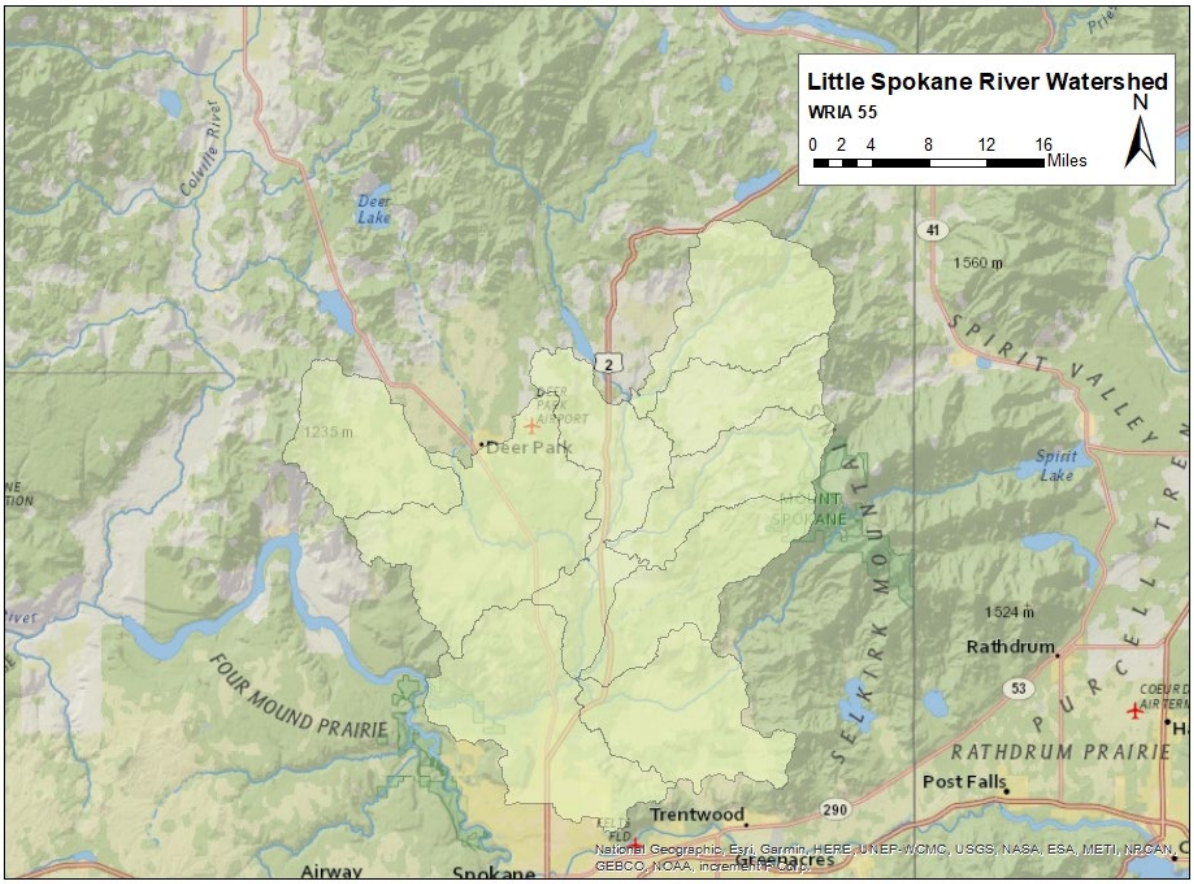

Figure 16. Map of the Little Spokane River watershed.

Implementing Little Spokane River TMDLs for bacteria, temperature, dissolved oxygen, total phosphorus, and pH.

Summary/Context Info:

The Little Spokane River is a vital tributary to the Spokane River and is impaired by multiple pollutants. In 2012, EPA approved a TMDL on the Little Spokane River watershed for fecal coliform, temperature, and turbidity. A second TMDL was completed for the Little Spokane River to address dissolved oxygen, total phosphorus, and pH was prepared in 2020. In January 2021, the Environmental Protection Agency (EPA) approved the Little Spokane River Dissolved Oxygen and pH Total Maximum Daily Load (TMDL) water quality improvement plan[16]. In 2022 the following work was implemented to address the approved TMDLs.

- ~3100’ of 50’ riparian buffer protected and enhanced.
- 18 Beaver Dam analogs installed.
- Outreach & education to Gonzaga University students

[16] https://apps.ecology.wa.gov/publications/SummaryPages/2010033.html.

- Comprehensive QAPP to monitor effectiveness.
- Order and compliance schedule to upgrade fish hatchery.

Looking forward, we will continue to work with key partners, including tribes, conservation organizations, and local agencies, to implement the Lower Spokane cleanup plan. The majority of the pollution in the Little Spokane River comes from nonpoint sources including timber harvest, agriculture, and development. As a result, the cleanup plan focuses on improving stream health by protecting and restoring riparian areas. Additionally, implementing widespread use of conservation tillage techniques (i.e., direct seed) will be critical to meet water quality standards. Eliminating these pollution sources will create functional habitat for important aquatic species, like the mountain whitefish and redband trout, and ensure safe swimming, fishing, and boating.

Priority Actions:

Financial Assistance

- Finalized Grant Agreements with the Spokane CD and Spokane Tribe for Funding: Worked to ensure funding was available via the state Centennial/319 program. The goal was to support landowners to implement riparian and tillage BMPs where sites were identified and prioritized via the Little Spokane Watershed Evaluation.

Partner Coordination

- Hosted Quarterly Update Meetings with The Spokane Riverkeeper: Kept the Spokane Riverkeeper up to speed on work in the Little Spokane Watershed.
- Hosted Quarterly Partner Meetings with The Spokane Conservation District: Met with the Spokane CD to fund and implement riparian protection and restoration at priority water quality problem sites.
- Hosted Coordination Meeting with the Spokane Tribe: Met with the Spokane Tribe to fund and implement riparian protection and restoration at priority water quality problem sites.
- Participated in Coordination Meeting with the Lands Council: Met with the Lands Council to discuss restoration projects in the watershed.
- Participated in Field Tour with Pend Oreille Conservation District: Met with the Pend Oreille CD to fund and implement riparian protection and restoration at priority water quality problem sites in the Upper Little Spokane Watershed.

Pollution Identification/Watershed Evaluating

- Performed Comprehensive Watershed Evaluations: Ecology staff documented at least 20 non-point pollution problems in the watershed using the eastern Region evaluation process. Five of these sites were prioritized using site specific criteria, such as the length of stream impacted and the severity of riparian area damaged.

Compliance Activities

- Contacted at Least Five Priority Pollution Sites: At least five non-point pollution sites were prioritized and then contacted both via phone and by certified letter. Staff offered technical and financial assistance to the landowner to proactively achieve compliance.
- Performed priority site field visits and made recommendations: Visited at least five properties with non-point pollution problems in the watershed to explain water quality problems and steps needed to achieve compliance.
- Followed up on non-point complaint sites: Contacted valid compliant sites with non-point pollution issues and scheduled site visits to provide technical and financial assistance.
- Draft Formal Enforcement at Peone Creek: A livestock site in this watershed has been sent multiple technical assistance letters and a warning letter and no progress had been achieved. Ecology pursued formal enforcement to achieve compliance at the site in 2022.

Monitoring Activities

- Tracked Non-Point BMP Implementation: Ecology staff tracked several numeric criteria including acres of riparian area planted, linear feet of stream restored, and feet or miles of exclusion fencing. Staff also be tracked and reported on the success of the watershed evaluation efforts including number of sites contacted, number of plans developed, number of sites brought into compliance, etc.
- Established Photo Monitoring Points: Staff established photo monitoring points at pollution problem sites and documented riparian condition improvements over time.

Priority Watershed: Blue Mountain Snake River Tributaries

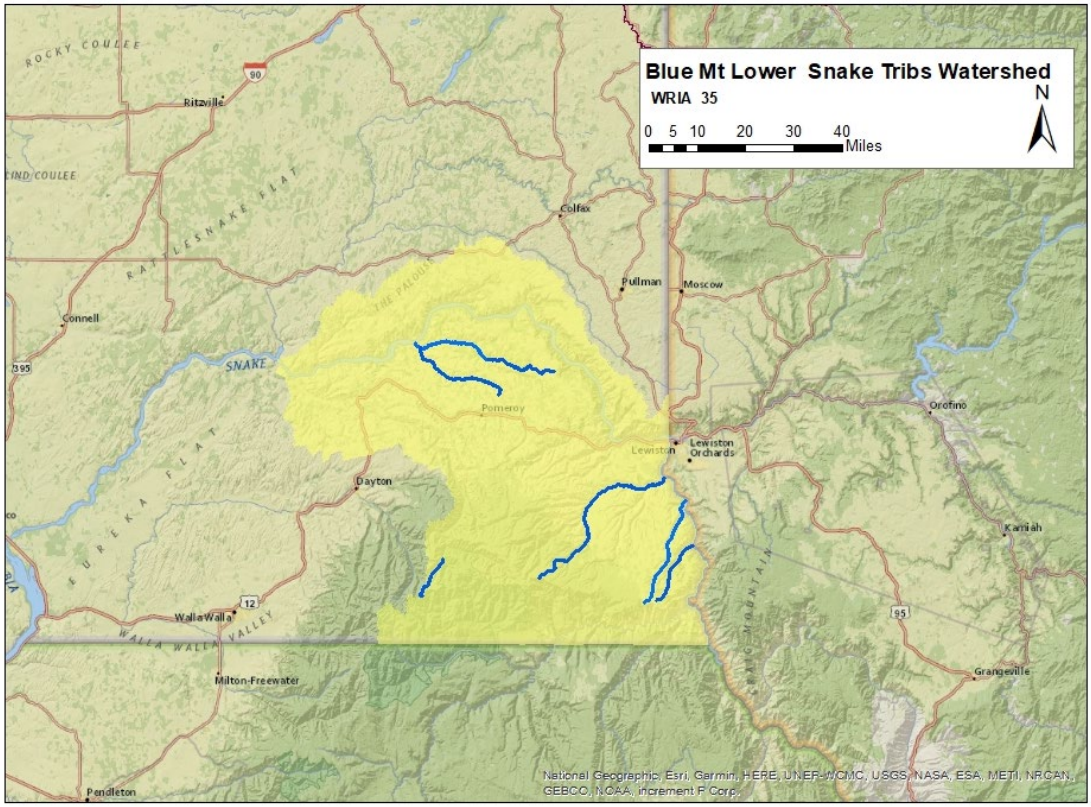

Figure 17. Map showing Snake River Tributaries (Asotin Creek, Alpowa Creek, Deadman Creek, Meadow Creek, Tenmile Creek and Couse Creek).

Implementing: Asotin Creek STI and Alpowa Creek, Deadman and Meadow Creeks, Tenmile Creek, and Couse Creek 4b projects.

Summary/Context Info:

The Blue Mountain/Lower Snake tributaries comprise all the Snake River tributaries ranging across Columbia, Garfield, and Asotin Counties except for the Tucannon River. These drainages primarily originate in the Blue Mountains or foothills surrounding the region. The headwaters and upstream sections are often forested with minimal land-use and switching to agriculturally dominated lower reaches. Livestock grazing remains an ongoing concern throughout the watershed. Ecology has initiated 4b Straight to Implementation strategies in these watersheds, provided the lack of point sources and significant progress is being made to address well understood nonpoint pollution issues. Ecology is actively working in these watersheds to continue to implement projects and work with stakeholders to address these issues.

Priority Actions:

Education and Outreach

- Attended Snake River Salmon Recovery Board Meetings: Ecology staff presented and assisted with local project stakeholders on salmon recovery projects that interact with water quality BMPs. Staff assisted with identifying water quality improvements for projects looking to protect and restore salmonid habitat.

Financial Assistance

- Completed the Asotin County Conservation District Riparian Enhancement Project ($250,000): This grant implemented various BMPs across Asotin County including riparian buffers, streambank stabilization, livestock exclusion, and direct seeding. The project supported implementation at priority sites identified via Ecology watershed evaluations. The grant expired on 6/30/2022.
- Implement the Asotin County Conservation District Water Quality Enhancement Project ($333,333): This grant implements various BMPs across 40,000 stream feet of Asotin County tributaries including a minimum of 20,000 plantings. BMPs include riparian buffers, streambank stabilization, livestock exclusion, and direct seeding. The project supports implementation at priority sites identified via Ecology watershed evaluations. This grant is active through the end of 2024.
- Implemented the Blachly Deadman Creek CREP Partnership Project ($29,500): Staff partnered with the Pomeroy CD to address a long-term livestock issue in the Deadman Creek watershed. The site had received multiple technical assistance contacts and a warning letter from Ecology. These funds were used in 2022 to compliment CREP funding to exclude livestock from two miles of stream and provide livestock watering to further protect water quality along Deadman Creek. The stock water tanks, and some livestock exclusion fencing has been installed. CREP buffers is still being implemented.

Partner Coordination

- Hosted Quarterly Asotin County Conservation District Coordination Meetings: Ecology works closely with the staff at Asotin CD to identify issues, coordinator plan/projects, and provide technical assistance to the public in Asotin County.
- Hosted Quarterly Pomeroy Conservation District Coordination Meetings: Ecology works closely with the staff at Pomeroy CD to identify issues, coordinator plan/projects, and provide technical assistance to the public in Garfield County.
- Partnered with the Columbia Conservation District: New staff has been hired at the Columbia CD. Ecology developed a working relationship with CD staff to identify issues, coordinator plan/projects, and provide technical assistance to the public in Columbia County.
- Participated on the Snake River Salmon Recovery Board RTT: Ecology consistently works with various stakeholders involved in salmon recovery efforts in the region. As a lead entity voting member and a member of the Regional Technical Team, Ecology assists with

the SRSRB annual grant round and provides technical assistance for water quality issues as they relate to salmon recovery and habitat restoration.

- Participated in Snake River Local Working Group Meeting: Ecology staff participate in this basin wide working group focused on challenges and solutions to the greater Snake River watersheds.

Pollution Identification/Watershed Evaluating

- Perform Comprehensive Watershed Evaluation: Annual surveys were conducted during the early spring season to identify livestock water pollution issues. Work was focused on a majority of Snake River tributaries including the Tucannon River, Pataha Creek, Deadman Creek, Meadow Creek, Alpowa Creek, Asotin Creek, Tenmile Creek, Couse Creek, and associated tributaries. Due to gaps in staffing, sites were not contacted. However, the information collected will be used to inform the prioritization of new sites and follow up on those previously contacted and remaining out of compliance, in 2023.

Compliance Activities

- Followed-up on Non-point WQ Complaints: Staff continued to respond to any water quality complaints received from the public. Phone calls and/or letters may follow after staff have confirmed a water quality issue exists.

Monitoring Activities

- Established Photo Monitoring Points: Staff established photo monitoring points at pollution problem sites and documented riparian condition improvements over time.
- Perform Asotin Creek Temperature Monitoring: Partnered with Asotin CD to monitor temperature at sites identified in the STI strategy. Monitoring helps evaluate effectiveness of past BMP implementation.

Eastern Region Priority Watershed: Hangman Creek

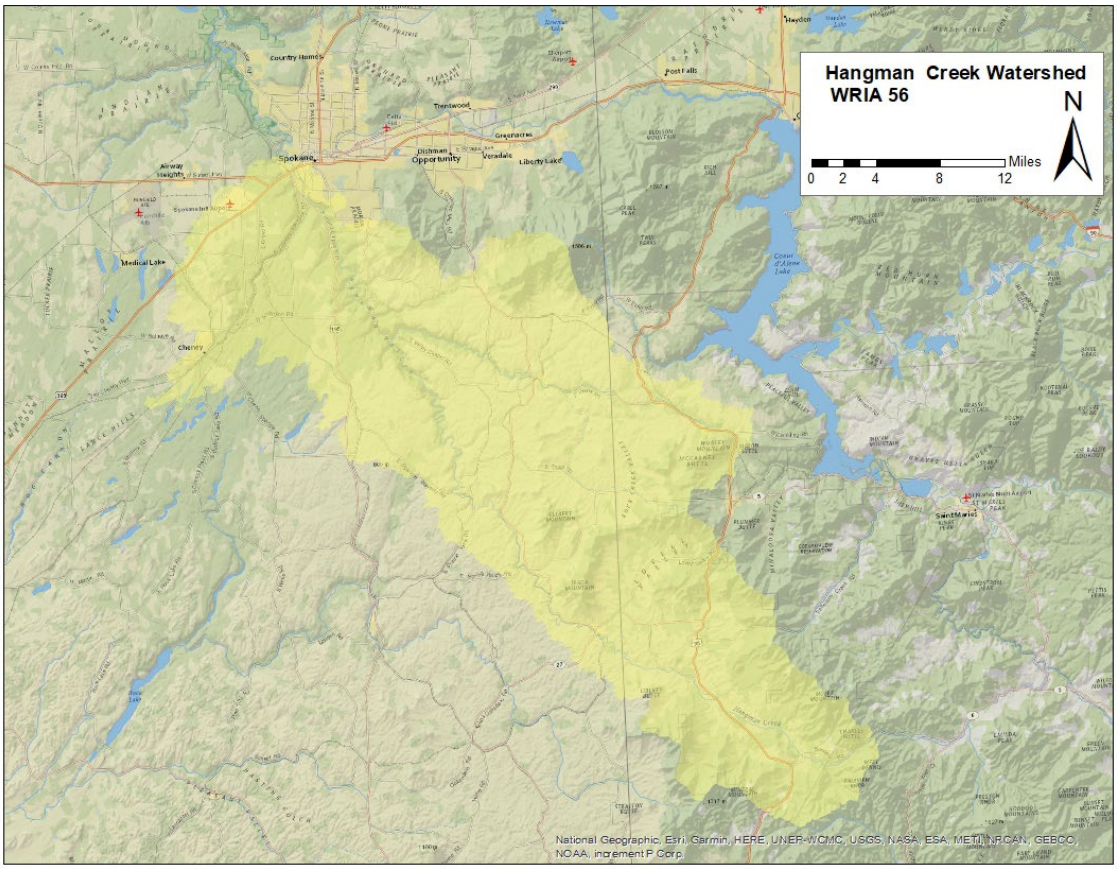

Figure 18. Map of the Hangman Creek watershed.

Implementing: Hangman Creek Multi-Parameter TMDL/Hangman Watershed Settlement Agreement

Summary/Context Info:

In 2022, the Eastern Region worked with federal, state, and local partners to make significant on-the-ground improvements that help us achieve clean water requirements. During the initial five years of the Hangman Settlement Agreement, 75 producers were contacted and offered technical and financial assistance. More than 100 site visits have been performed in the watershed. The following is a status of activity:

- Water quality problems fixed – 14 (2 of these were the result of an administrative order)
- Plans developed, to be implemented in 2023 – 22.
- Currently being implemented – 9
- Sites in communication but plans still being negotiated – 10.
- Partial plan implemented/unwilling to implement fully protective plan – 14.

- Unresponsive or unwilling – 6 (2 of these have received an administrative order and are pending)

We continued to look for creative opportunities to implement water quality improvements, including directing some Centennial and 319 grant funds to farmers in the watershed. As an example, the Eastern Regional Office in partnership with the Spokane Conservation District, initiated a Hangman Creek Pilot project in 2022. The pilot project funded implementation of Riparian Forest Buffers in the watershed using Site Potential Tree Height as a guide to buffer width. The pilot project targets Ecology priority sites, which are typically the biggest pollution problems in the watershed. The initial 2022 investment in the program was one million dollars. Contracts were developed with landowners, enrolling 70 acres into the program. Due to interest, near the end of 2022 Ecology increased the pilot program budget to 3.5 million dollars. As a result, at least 206 acres of highly impacted Hangman watershed riparian areas will be restored in 2023. The Spokane Conservation District and likely other watershed stakeholders will be key partners in the implementation efforts.

Streams in the Hangman Watershed are impaired by excess bacteria, turbidity, and elevated water temperatures. The watershed is dominated by agricultural nonpoint sources. The watershed was studied to develop a TMDL report and ultimately a TMDL implementation plan. The implementation plan was completed in 2011. The Spokane Riverkeeper challenged the EPA approval of the TMDL. EPA, Ecology, and Riverkeeper negotiated a 10-year agreement that identifies and priorities specific actions to reduce pollution and ultimately make progress towards water quality improvements within the Hangman watershed. The agreement was signed in 2018 and Ecology is actively implementing.

Priority Actions:

Education and Outreach

- Direct Mailings to Watershed Residents: Ecology drafted the first in a series of brochures to mail to over 2,500 watershed addresses. The purpose of the brochures is for Ecology to communicate directly with residents about current efforts in the watershed, sources of pollution and BMPs, funding sources, etc. Ecology anticipates mailing the first brochure in 2023.

Financial Assistance

- Implemented the Spokane Tribe of Indians, *DIF Project Maintenance, Riparian Restoration, and Livestock BMPs* Project ($257,868): This project includes project maintenance on previously installed riparian restoration sites of high priority identified by Ecology within the Hangman watershed. This three-year grant had just gotten under underway near the end of 2022 providing funding for ensuring successful riparian establishment along these sites.
- Implemented the Spokane Riverkeeper, *Rock and Hangman Creeks Riparian Restoration and Water Quality Improvement* Project ($256,892): This project will continue to improve nonpoint pollution issues throughout the watershed by installing 50 acres of

riparian plantings, establishing three water quality monitoring locations, 10 water temperature loggers, and provide education and outreach programs to maximize restoration efforts within the watershed. This three-year grant had just gotten under underway near the end of 2022.

- Implemented the Spokane Conservation District, *Spokane Riparian Establishment* Project ($283,500): This project implements three projects, two of which are in the Hangman watershed. These projects include livestock BMPs and riparian restoration. This three-year project got underway near the end of 2022.
- Implemented the *Hangman Riparian Restoration and Conservation Program* ($2,500,000): This program provides rental rates with long-term contracts for agricultural riparian land taken out of production and planted with native trees and shrubs. Ecology partnered with Spokane Conservation District on this project. This program will implement approx. 206 acres of riparian tree and shrub plantings along perennial streams in the Hangman watershed.
- Implemented the Spokane CD, *Making Conservation Pay* Project ($3,000,000): This loan from State Revolving Funds allowed Spokane County Conservation District to expand their Direct Seed Equipment Loan program to 13 counties in Eastern Washington. This program allows producers to purchase the necessary direct seed equipment to practice low disturbance, direct seed conservation tillage. This loan helps to convert acres in the Hangman Creek farmed with conventional tillage techniques to direct seed. This three-year program is well underway and currently providing equipment loans to multiple producers in Eastern WA.
- Implemented the Spokane CD, *Hangman Creek Streambank Stabilization RM-17 Phase II* Project ($333,333): This project builds upon and continues work along Hangman Creek at river mile 17 to stabilize banks, plant riparian buffers and install irrigation systems to improve plant survival. The second phase of the project prevented an estimated 16,000 tons of sediment from reaching the Spokane River. Designs, materials, and permits were obtained in 2021, and the project was constructed in 2022. Riparian planting maintenance and general monitoring is planned for 2023.
- Implemented the Spokane CD, *Hangman Creek Agricultural BMP Assistance* Project ($1,500,000): This project increases community awareness, addresses agricultural sediment pathways, inventories bank erosion contributions, implements 3,000 feet of stream restoration and reduces sediment delivery through producer incentives, cost-share programs, and loans. The funding allows the Spokane CD to support producers by focusing implementation at high priority sites identified during Ecology watershed evaluations. This three-year project is well underway providing financial assistance to implement multiple projects throughout the watershed.
- Implemented the Lands Council, *Hangman Creek Watershed Riparian and Wetland Restoration* Project ($294,600): This FY22 grant project continues The Land Council's work in the Hangman Watershed by installing Beaver Dam Analogs, planting riparian buffers, and educating agricultural producers and local youth in the watershed.

Partner Coordination

- Hosted Bimonthly Update Meetings with the Spokane Riverkeeper: Met with the Spokane Riverkeeper every other month to provide updates on work in the Hangman Creek Watershed, talk through issues, and plan for future work.
- Met Regularly with Watershed Partners: Ecology met regularly with watershed partners to plan, fund, and coordinate on implementing best management practices that improve and protect water quality. Watershed partners met with included, but are not limited to: Spokane Tribe of Indians, Spokane Riverkeeper, Spokane CD, Pine Creek CD, The Lands Council, Inland NW Land Conservancy, Coeur d'Alene Tribe, and Spokane Falls Trout Unlimited.
- Ecology and Partners Worked on Obtaining Funding for a new Hangman Creek Watershed Riparian Restoration Program: Ecology regional staff submitted a proposal for $1M to establish the Hangman Riparian Restoration and Conservation Program – This program provides rental rates with long-term contracts for agricultural riparian land taken out of production. Ecology partnered with Spokane Conservation District on the program. The proposal was funded in 2021 outreach for enrollment was completed in 2022, identifying the need for more funds. A second proposal was awarded for an additional $2.2 M in order to meet the demand. Implementation of approx. 206 acres of previously farmed riparian areas will begin in 2023.

Pollution Identification/Watershed Evaluating

- Performed Comprehensive Watershed Evaluation: Ecology staff documented 55 non-point pollution problems in the watershed using the ERO watershed evaluation process. A minimum of 10 tillage sites and 5 livestock sites were prioritized using site specific criteria, such as the length of stream impacted and the severity of riparian damage. Prioritized sites were contacted by phone and certified mail offering technical and financial assistance.

Compliance Activities

- Contacted a minimum 15 New Priority Pollution Sites: At least 15 non-point pollution sites were prioritized and then contacted both via phone and by certified letter. Staff offered technical and financial assistance to the landowner to proactively achieve compliance.
- Contacted At least 20 Existing Priority Pollution Sites: Many sites in the Hangman watershed have been previously contacted but have yet to make the needed changes to protect water quality. Ecology contacted at least 20 of those landowners and again offered technical and financial assistance.
- Performed Priority Site Field Visits at 15 Properties and Make Recommendations: Visited at least 15 properties with non-point pollution problems in the watershed to explain water quality problems and steps needed to achieve compliance.
- Developed 10 Water Quality Protection Plans for Priority Sites: Developed plans for at least 10 sites to implement BMPs sufficient to fully protect water quality.

- Followed Up on Non-Point Complaint Sites: Contacted valid complaint sites with non-point pollution issues and scheduled site visits to provide technical and financial assistance.
- Issued and Enforced the Administrative Order issued to Murphy Creek Livestock Operation: In January 2021, Ecology issued an Administrative Order requiring a landowner to exclude cattle a minimum of 50 feet from Murphy Creek. The timelines in the order required that the order be implemented by summer 2021. The Order was appealed and at the end of 2021 the Pollution Control Hearing Board (PCHB) was reviewing the case. The Order was upheld by the PCHB in 2021 and the Order was implemented in fall 2022.
- Issued and Enforced the Administrative Order issued to Spangle Creek Tributary Livestock Operation: In November 2021, Ecology issued an Order requiring a landowner to exclude cattle a minimum of 35 feet from a tributary to Spangle Creek. By the end of 2021, the landowner was actively communicating with the Spokane Conservation District and Ecology staff on a plan to implement the Order. The Order was implemented early summer 2022.
- Issued and Enforced the Administrative Order issued to SF Rock Creek Agricultural Operation: In August 2022, Ecology issued an Administrative Order requiring an agricultural operator to implement appropriately sized riparian buffers along SF Rock Creek and its tributaries across two sites they actively farm. The Order was appealed and at the end of 2022 the Pollution Control Hearing Board (PCHB) was reviewing the case.
- Additional Enforcement in Hangman Creek: Ecology staff sent 8 warning letters in 2022 to sites still out of compliance.

Monitoring Activities

- Monitor Existing Sites: Staff continued to monitor and document existing sites where water quality concerns persist.
- Tracking Non-point BMP implementation: Ecology staff tracked a number of numeric criteria including acres of riparian area planted, linear feet of stream restored, feet or miles of exclusion fencing, and acres of conservation tillage. Staff also track and report on the success of the watershed evaluation efforts including number of sites contacted, number of plans developed, number of sites brought into compliance, etc.

Priority Watershed Name: Whitman Snake Tributaries

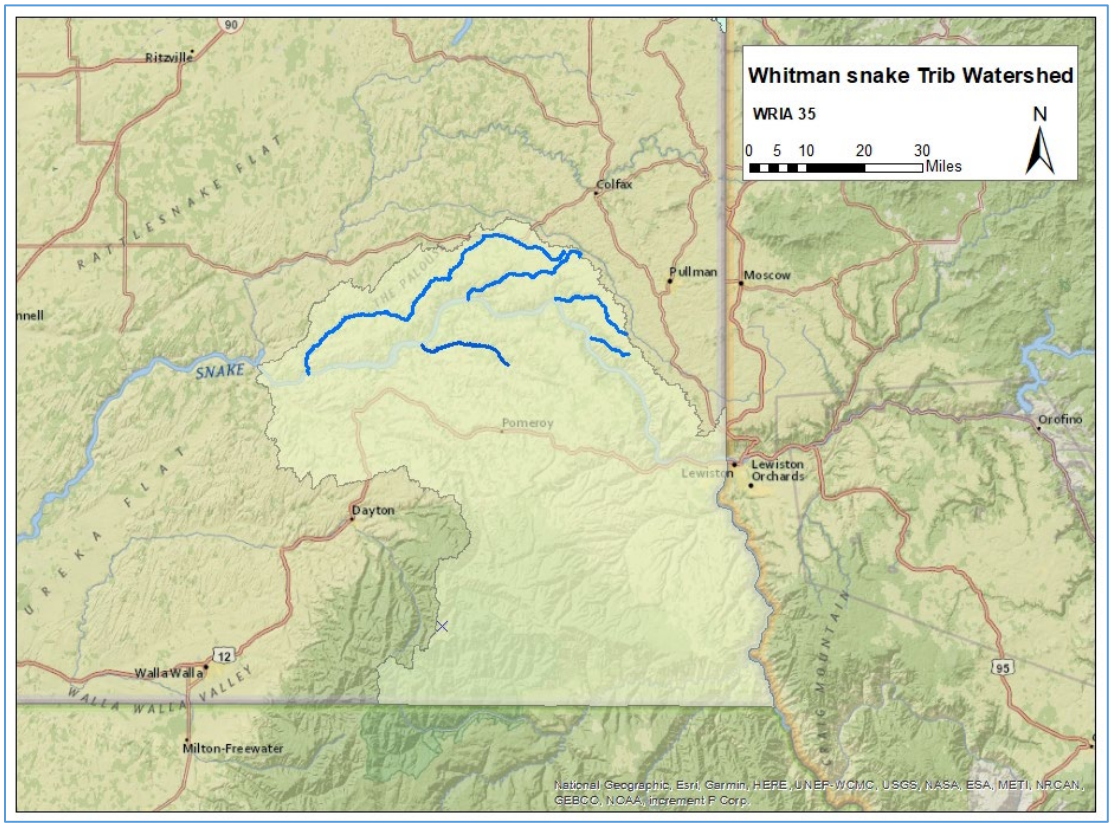

Figure 19. Map showing Snake River Tributaries (Steptoe Creek, Almota Creek and Alkali Flat Creek).

Implementing: Steptoe Creek STI, Early Implementation Actions for Almota Creek and Alkali Flat Creek STIs (In development).

Summary/Context Info:

A number of northern Snake River tributaries in Whitman County have been identified as Category 5 on the Water Quality Assessment. Some watersheds currently have established Straight to Implementation Strategies in place (Steptoe Creek) and others currently in development (Almota Creek and Alkali Flat Creek). These northern tributaries are largely dominated by agricultural land-use with livestock issues often impacting the riparian habitat. Ecology has continued to work with local stakeholders through project implementation and technical assistance to further combat these issues.

Priority Actions:

Education and Outreach

- Partnered with the Palouse Conservation District on Conservation Tillage Education: Through grant funds PCD hosted various presentations, tours, and outreach materials for local producers on conservation tillage and riparian buffers. PCD has utilized multiple

Ecology grants to develop a conservation tillage cost-share program which is well advertised throughout the district's footprint and beyond.

- Partnered with the Whitman Conservation on Outreach to **Students:** District staff visited K-12th grade classrooms giving presentations on restoration practices while university students participated in volunteer planting events.

Financial Assistance

- Implementing the Whitman Conservation District, *Water Quality Enhancement through Restoration of Function Project* ($210,000): This active grant continues to work off previous efforts to exclude livestock, establish riparian buffers, and install instream structures, to improve water quality throughout the Alkali Flat Creek watershed.
- Implementing the Palouse Conservation District, *Supporting Sustainable Ranching on Snake River Tributaries* ($500,000): The PCD is working with livestock producers along both Steptoe Creek and Wawawai Canyon to install livestock BMPs, increase monitoring, and provide education/outreach to local livestock producers. The grant provides funding to help install riparian buffers at livestock priority pollution sites identified by Ecology staff.

Partner Coordination

- Hosted Quarterly Meetings with the Whitman Conservation District: Ecology worked closely with the staff of Whitman CD to identify issues, coordinator plan/projects, and provide technical assistance to the public in the region.
- Hosted Quarterly Meetings with the Palouse Conservation District: While much of the work the Palouse CD revolves around the Palouse Watershed, their district falls within the boundaries of both Steptoe Creek and Wawawai Canyon. Ecology worked extensively with PCD staff through various project implementation, technical assistance, and events.
- Participated with the Snake River Salmon Recovery Board: Ecology consistently worked with various stakeholders involved in salmon recovery efforts in the region, including Whitman County Snake River tributaries. As a lead entity voting member and a member of the Regional Technical Team, Ecology assists with the SRSRB annual grant round and provides technical assistance for water quality issues as they relate to salmon recovery and habitat restoration.
- Participated with the Snake River Local Working Group: Ecology staff participated in this basin wide working group focused on challenges and solutions to the greater Snake River watersheds.

Pollution Identification/Watershed Evaluating

- Performed Comprehensive Watershed Evaluation: Annual surveys were conducted during the early spring season that identified livestock water pollution issues. Work was focused on a majority of Snake River tributaries including Alkali Flat Creek, Penawawa Creek, Almota Creek, Wawawai Canyon, and their associated tributaries. Due to gaps in staffing, sites were not contacted. However, the information collected will be used to

inform the prioritization of new sites and follow up on those previously contacted and remaining out of compliance, in 2023.

Compliance Activities

- Ensure Final Steptoe Order Implementation: An administrative order was sent to a landowner in the Steptoe Creek Watershed in 2019 addressing ongoing livestock pollution issues. Since the order was sent, Ecology, along with the partnership of the Palouse CD have developed a plan to address the site. Most of the riparian buffer and other elements have been implemented. Additional livestock exclusion fencing, and riparian planting was conducted in 2022. Except for emergency water gaps, livestock exclusion will be achieved in 2023.
- Responded to Non-Point Complaints: ERO responds to all water quality related complaints in these watersheds. If pollution site is identified to be of concern, ERO sends a follow-up technical assistance letter to further address the water quality concern.

Monitoring Activities

- Partnered with the Palouse Conservation District to monitor in Steptoe Creek: Through an FY22 grant, Ecology staff partnered with the CD to monitor Steptoe Creek to ensure livestock BMPs implemented in the watershed work to fully protect water quality. This will help adaptive management in the watershed.
- Established Photo Monitoring Points: Staff established photo monitoring points at pollution problem sites and document riparian condition improvements over time.
- Perform Ambient Monitoring in Alkali Flat Creek: Ecology has a monitoring location established at Alkali Flat Creek that is likely to move in 2023.

Priority Watershed Name: Palouse River

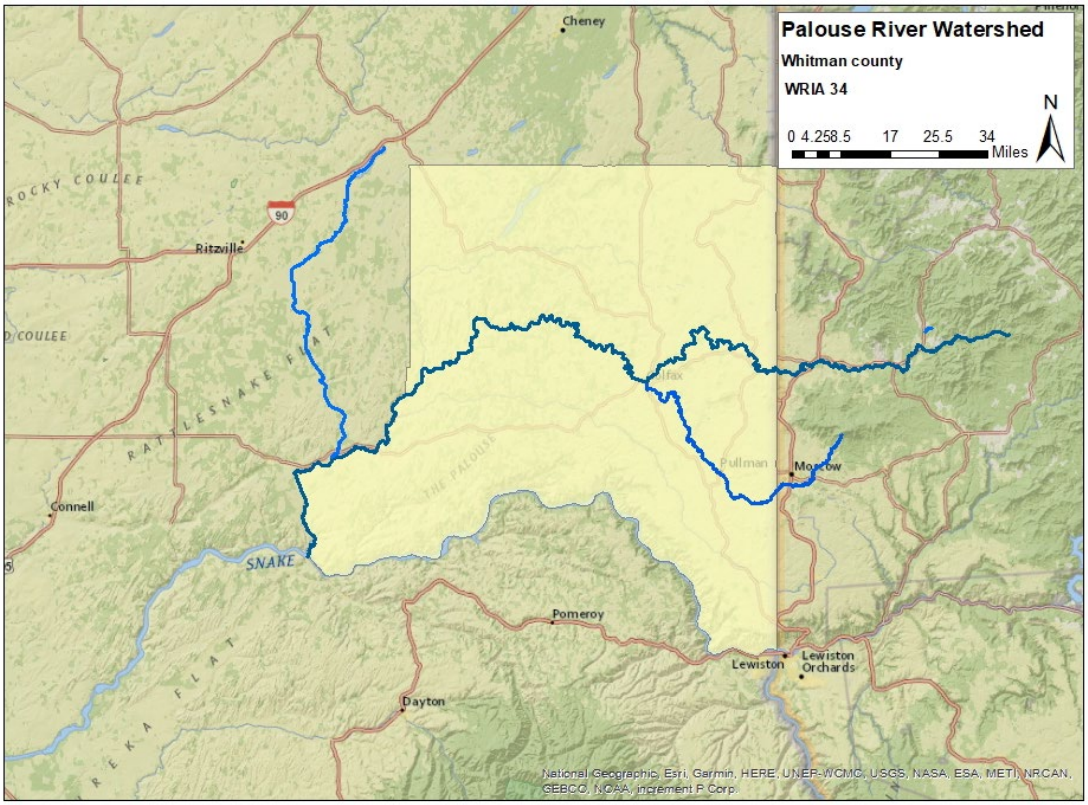

Figure 20. Map of the Palouse River watershed.

Implementing: North Fork Palouse Fecal Coliform Bacteria, DO, and pH TMDL; Palouse River Fecal Coliform Bacteria TMDL; Palouse River Temperature TMDL; Palouse River Toxics TMDL; South Fork Palouse Ammonia TMDL; South Fork Palouse DO, pH, and temperature TMDL; and South Fork Fecal Coliform TMDL.

Summary/Context Info:

Streams in the Palouse Watershed are impaired by excess bacteria, DO, pH, toxics, and elevated water temperatures. The watershed is dominated by agricultural nonpoint sources. The watershed and its sub basins have been studied several times and multiple TMDL reports, and subsequent implementation plans have been developed.

Priority Actions:

Education and Outreach

- Attended Conservation District Board Meetings: The CD boards are made up of area farmers and ranchers. Staff attended board meetings to inform the CD board of on-going water quality work in the Palouse River watershed, collaborate on project implementation, and answer questions on efforts to implement projects.

Financial Assistance

- Implemented the Palouse Rock Lake Conservation District Eastern Washington Low Disturbance Direct Seed Demonstration Project ($299,000): This three year project currently provides producers with low disturbance direct seed cost-share opportunities to rent direct seed drills or hire custom seeding with direct seed drills. The project has enrolled a minimum of 10 producers in a direct seed program capturing a minimum 13,500 acres in high residue direct seed practices. This project was wrapped up late 2022.
- Implemented the Palouse Conservation District the Water Quality Saga: A Cost-Share-nary Tale Project ($666,666): This three year project continues to improve water quality in Whitman County streams by implementing a minimum of ten acres of riparian buffer and 6,750 acres of direct seeding. The project conducts monitoring efforts on changes in crop residue cover with conservation farming practices and implement an outreach and education program to further improve water quality awareness throughout Whitman County.
- Implemented the Palouse Conservation District Cart before the horse: Restoring the North Fork Palouse River Watershed Project ($333,333): Conservation programs in the North Fork Palouse River watershed have had moderate success at meeting needs of landowners while improving water quality. This project has been addressing shortfalls by engaging landowners, community organizations, and local schools in the Cedar Creek, Silver Creek, and Clear Creek sub-watersheds by developing and implementing conservation outreach and educational programs, restoring a minimum of 7 acres of riparian areas, and monitoring water quality improvement efforts.
- Implemented the Palouse Conservation District Direct Seed Partnership on the Palouse Project ($666,666): This project currently builds on partnerships developed in the Palouse Watershed Regional Conservation Partnership Program (RCPP) by implementing Best Management Practices (BMP) on agricultural lands in Whitman County. The project has been installing 9,000 acres of direct seeding (including 750 acres of fallow), implementing riparian buffers, monitoring water quality, and providing educations/outreach programs to further improve water quality in the Palouse River watershed.
- Implemented the Palouse Conservation District Direct Paradise Creek Riparian Restoration Project ($333,333): This project continued to improve nonpoint pollution issues throughout the creek by installing riparian buffers, monitoring water quality, and providing education and outreach programs to maximize restoration efforts along this Palouse watershed subbasin.
- Implemented the Palouse Conservation District Direct Seed Partnership Implementation and Monitoring Project ($625,000): This project implemented four miles of riparian buffers and 13,500 acres of direct seeding to improve water quality in the Palouse River watershed. The project also monitored the effects of riparian restoration and converting from conventional tillage to direct seeding to determine effects on stream water quality.
- Implemented the Palouse Conservation District Watershed Planning for Optimal BMP Placement and NPS Pollution Reduction Project ($333,333): This three year project used

a BMP effectiveness tool in collaboration with district planners to identify critical source areas and the greatest pollution reduction. District planners and landowners were educated on advanced BMP implementation strategies. Water quality monitoring was used to assess watershed scale effectiveness. The effectiveness tool was successfully developed, and this project was wrapped up in December 2022. The tool helps planners prioritize implementation and outreach efforts in the Palouse.

- Implemented the Palouse Conservation District Palouse Basin Water Quality Improvements Project ($666,500): This three year project continued to implement riparian restoration and bank stabilization across a minimum of 30 acres within the North and South Fork Palouse River to provide nonpoint source pollutant control, bank stability, lower stream temperatures, and reduced soil erosion. This project also has water quality monitoring and education/outreach components.
- Implemented the Palouse Conservation District Thinking outside the Fertilizer Box: Conservation on Union Flat Creek Project ($666,666): This project continued to implement 8.5 acres of riparian buffers and 9,000 acres of direct seeding to improve water quality in the Palouse River Watershed. Effects of riparian restoration and conversion from conventional tillage to direct seeding have been monitored to determine effects on stream water quality. This project also implemented a demonstration project for precision nutrient management on 1,200 acres, providing outreach and education with field days, workshops, and curriculum development.
- Implemented the Palouse Conservation District Palouse Basin BMP Implementation for Water Quality Improvement ($666,500): This project addressed and improved water quality issues identified at multiple sites in the Palouse River watershed on both the North and South Fork Palouse River and on Union Flat Creek. Riparian restoration activities reduced nonpoint source pollution, regulated water temperature, decreased soil erosion, and increased bank stability. Additional livestock best management practices (BMPs) were implemented as needed including exclusion fencing, off-stream watering, and livestock crossings.
- Implemented the Palouse Conservation District Full Stream Ahead! Riparian Restoration Innovations on the Palouse River Project ($666,666): Riparian buffers improve water quality, yet in artificially-drained agricultural regions, water can bypass riparian soils and plant roots, reducing their capacity to remove nutrients. This multi-approach project will restore 15 ac (1.5 miles), install four beaver dam analogs (BDAs), and construct three saturated riparian buffers, a new conservation practice that facilitates riparian nitrogen removal, to improve water quality in the South Fork Palouse River watershed. This three year project began implementation in 2022.
- Implemented the Palouse Conservation District Supporting Sustainable Ranching on Snake River Tributaries Project ($666,666): The Palouse Conservation District (PCD) works with livestock producers along Steptoe and Wawawai Creek to install livestock Best Management Practices (BMPs) and riparian projects targeting water quality in the Middle Snake River Watershed (WRIA35). Additionally, water quality monitoring to quantify project success will allow PCD to adaptively manage these sites by gauging

pollutant load reductions, while targeted outreach will engage local livestock producers. This three year project began implementation in 2022.

- Implemented the Palouse Conservation District Do the Residue! Promoting Direct Seed Operations on the Palouse Project ($666,666): The PCD will lead the implementation of five acres of riparian buffers and 9,000 acres of direct seeding to improve water quality in Whitman County streams. A survey of producers will assess direct seed adoption by conservation program participants. Crop residue monitoring and outreach and education programs, including the Alternative Cropping Symposium and Direct Seed Breakfasts, will lead to further water quality improvements in the Palouse River watershed.
- Implemented the Palouse Rock Lake Conservation District Improving Water Quality on Rebel Flat Creek Project ($555,467): Concerns regarding water quality and soil erosion on the Palouse create a high demand for best management practices aimed to reduce nonpoint source pollutants. This project improves water quality and the culture of conservation by implementing 9,990 acres of conservation tillage, restoring, and maintaining two miles of riparian habitat, excluding livestock from stream access, creating cover crop demonstrations, and providing various education and outreach opportunities.
- Implemented the Palouse Rock Lake Conservation District One Pass at a Time-Conservation of Pine Creek Watershed ($491,156): Pine Creek of the Palouse Watershed fails state water quality standards by multiple parameters. This proposal addresses these failures and improve water quality by 1) Implementing 6750 acres of conservation tillage practices in the Pine Creek subwatershed through cost-sharing to reduce erosion and nonpoint source pollution 2) Implementing 1 mile of riparian enhancement in the Pine Creek subwatershed 3) demonstrate cover cropping as a viable chemical fallow alternative and 4) conduct local outreach and education.
- Implemented the Palouse Conservation District Partnership to Restore Riparian Areas in the Lower Fourmile Creek Watershed Project ($661,541): Riparian buffers improve water quality and ecological functions of streams. This project will restore 30 acres of riparian areas (23,000 streambank feet) in the lower Fourmile Creek watershed, including installing up to 600 feet of streambank protection and 10 to 12 beaver dam analogues, providing technical assistance, assessing revegetation methods, installing interpretive signs, and developing place-based curriculum on riparian restoration and conservation agriculture. Project planning was completed in 2022 and implementation is scheduled for 2023.
- Implemented the Palouse Conservation District Operation Residue: (Under) cover Crops & Direct Seeding on the Palouse Project ($590,716): Palouse Conservation District (PCD) will lead implementation of one stream mile of riparian forest buffer and 6,000 acres of direct seeding to improve water quality in Whitman County streams. A cover crop demonstration project will assist producers in improving soil health on their farms. Soil health assessment of direct seed and cover crop projects will demonstrate project effectiveness, and outreach and education programs will lead to further community investment in water quality improvements.

Partner Coordination

- Hosted Palouse Conservation District Coordination Meetings: Ecology worked closely with the staff at Palouse CD to identify issues, coordinate on plan/projects, and provide technical assistance to the public in Whitman County.
- Hosted Rock Lake Conservation District Coordination Meetings: Ecology worked closely with the staff at Palouse Rock Lake CD to identify issues, coordinate on plan/projects, and provide technical assistance to the public in Whitman County.
- Hosted Whitman Conservation District Coordination Meetings: Ecology worked closely with the staff at Whitman CD to identify issues, coordinate on plan/projects, and provide technical assistance to the public in Whitman County.
- Partnered with the Pine Creek Conservation District: Ecology began developing a working relationship with the new Pine Creek CD manager to identify issues, coordinator plan/projects, and provide technical assistance to the public in Whitman County.
- Participated on the Palouse Regional Conservation Partnership Program (RCPP): Ecology was an active participant in the first Palouse RCPP (2016-2021), and the approved renewal of that RCPP has (2021-2027). In 2022, the Palouse CD held a successful enrollment for projects with the new funding. Combined, the two RCPPs will have contributed over $14 million towards conservation practices in the Palouse watershed.

Pollution Identification/Watershed Evaluating

- Performed Comprehensive Watershed Evaluation: Annual surveys were conducted during the early spring season to identify livestock water pollution issues. Work was focused on a majority of the North and South Fork Palouse and tributaries.

Compliance Activities

- Contacted At Least Three Priority Pollution Sites: Three new landowners with livestock water quality issues were contacted via technical and financial assistance letters. All letters were followed up with multiple phone calls (if contact number is available) throughout the year to ensure continued communication with the landowner.
- Followed-Up on Previous Years Priority Sites: Landowners who have received technical assistance letters in previous years (same numbers as mentioned above), and who remain out of compliance, were contacted through additional phone calls and follow-up technical/financial assistance letters.
- Developed Water Quality Protection Plans for Priority Sites: Staff set up site visits with two landowners and worked to develop BMP plans for these sites. The plans included riparian buffers designed to fully protect water quality.
- Successfully defended an Administrative Order under appeal. The Department of Ecology won a case at the Pollution Controls Hearings Board in 2022 requiring a landowner to take specific actions to protect the water quality in a tributary to the Palouse River. Those actions included installing a riparian buffer along approximately 3000 feet of stream. The Department of Ecology will ensure that order is fully implemented in 2023.

- Followed-up on Non-point WQ Complaints: Staff continued to respond to any water quality complaints received from the public. Phone calls and/or letters may follow after staff have confirmed a water quality issue exists.

Monitoring Activities

- Monitor Existing Sites: Staff continued to monitor and document existing sites where water quality concerns persist.
- Continued to partner with Palouse CD on Monitoring Work: Palouse CD has taken the lead on monitoring efforts in the Palouse watershed. Ecology will continue to partner with Palouse CD on that effort.

Priority Watershed: Walla Walla Watershed

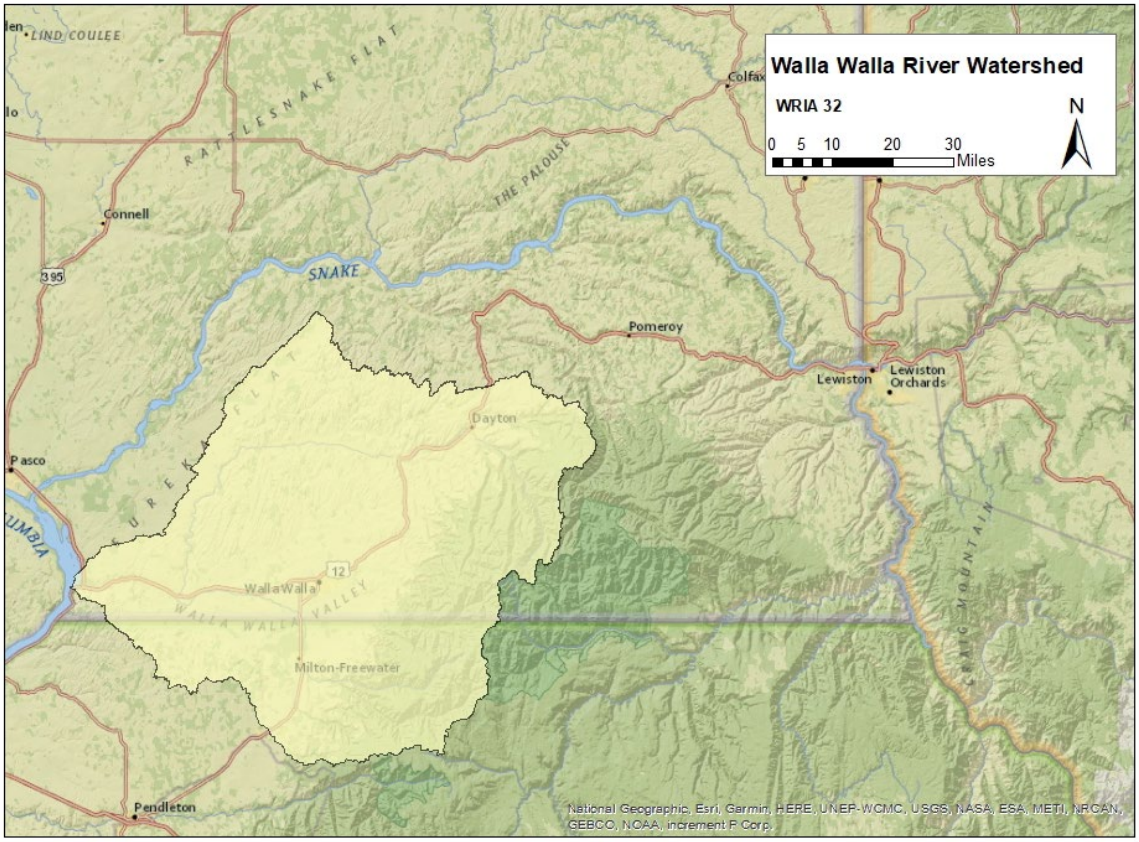

Figure 21. Map of the Walla Walla River Watershed

Implementing: Walla Walla River Watershed Multiparameter TMDLs (Bacteria, Temperature, pH, DO, Toxics).

Summary/Context Info:

The Eastern Region is continuing to implement the Walla Walla Watershed Multiparameter TMDL Water Quality Implementation Plan. A recent effectiveness monitoring study was completed in the watershed. Ecology has been active throughout the watershed through collaborating with stakeholders, funding restoration projects, and identifying new and ongoing water quality concern sites through annual watershed evaluations. The evaluations identify parcels with pollution problems. Regional staff then work with landowners and local partners to implement appropriately sized riparian buffers.

Priority Actions:

Education and Outreach

- Partnered with Kooskooskie Commons on Farm BMP Outreach: Ecology partnered on enhanced technical assistance outreach for environmental farm practices and riparian

buffer management in the Walla Walla watershed. Kooskooskie Commons and Ecology held various meetings, workshops, and tours in the region.

Financial Assistance

- Implemented the Walla Walla County Conservation District, Canopy Cover Improvements on the Touchet River Project ($170,604): This currently active grant continues to improve riparian habitat and water quality along the Touchet River by removing invasive false indigo and planting 3 miles of stream, further improving temperature issues.
- Implemented the Kooskooskie Commons, Improving Water Quality in Yellowhawk Creek, and W. Little Walla Walla River Project ($159,691): This grant implements riparian buffers along Yellowhawk Creek and the West Little Walla Walla River to address temperature and fecal coliform impairments. In addition, the funding continues to monitor water quality throughout the watershed and performs education and outreach in the Walla Walla region.
- Implemented the Walla Walla County Conservation District, Last Chance Road Restoration at RM 35.5 Project ($347,217): This grant was identified on the FY2022 funding offer list. The project continues to restore the Walla Walla River by installing bio-engineered structures to increase pooling and planting trees to cool the water temperature in the reach.

Partner Coordination

- Hosted Quarterly Meetings with the Walla Walla County Conservation District: Ecology staff work closely with the conservation district staff in planning and implementing Ecology grant funded projects.
- Participated on the Snake River Salmon Recovery Board Technical Team: Ecology works with various stakeholders involved in salmon recovery efforts in Walla Walla. As a lead entity voting member and a member of the Regional Technical Team, Ecology assists with the SRSRB annual grants and provides technical assistance to the group for water quality issues.
- Participated in the Snake River Local Working Group: Ecology staff participate in this basin wide working group focused on challenges and solutions to the greater Snake River watersheds.
- Participated in the Walla Walla 2050 Planning Efforts: Ecology's Office of the Columbia River are partnering with local stakeholders in the Walla Walla Watershed to develop new ways to protect water resources, water quality, and habitat. Ecology staff participated in workgroups and drafting of plans focused on water quality aspects of this effort.

Pollution Identification/Watershed Evaluating

- Performed Annual Watershed Evaluations: Surveys were conducted during the early spring season of 2022 that identified livestock water pollution issues. Work was focused on the Walla Walla River main stem and various tributaries including Pine Creek, Mud

Creek, West Little Walla Walla River, East Little Walla Walla River, Garrison Creek, Cottonwood Creek, Russel Creek, Dry Creek, Spring Creek, Coppei Creek, Touchet River, and Patit Creek. Due to gaps in staffing, sites were not contacted. However, the information collected will be used to inform the prioritization of new sites and follow up on those previously contacted and remaining out of compliance, in 2023.

Compliance Activities

- Followed-up on non-point complaint sites: Contacted valid compliant sites with non-point pollution issues and scheduled site visits that provided technical and financial assistance. Phone calls and/or letters followed with the goal of developing a plan for water quality protection and implementing the plan.

Monitoring Activities

- Partnered with Kooskooskie Commons to Collect Baseline Water Quality Data: Yellowhawk Creek, Caldwell Creek, Russell Creek, Whitney and Lasiter Spring Creek, and the West Little Walla Walla Creek were monitored. The hope is to continue examining this unique watershed and spring upwelling effects on temperature, DO, pH, conductivity, turbidity, and fecal coliform.

Priority Watershed: Moses Lake

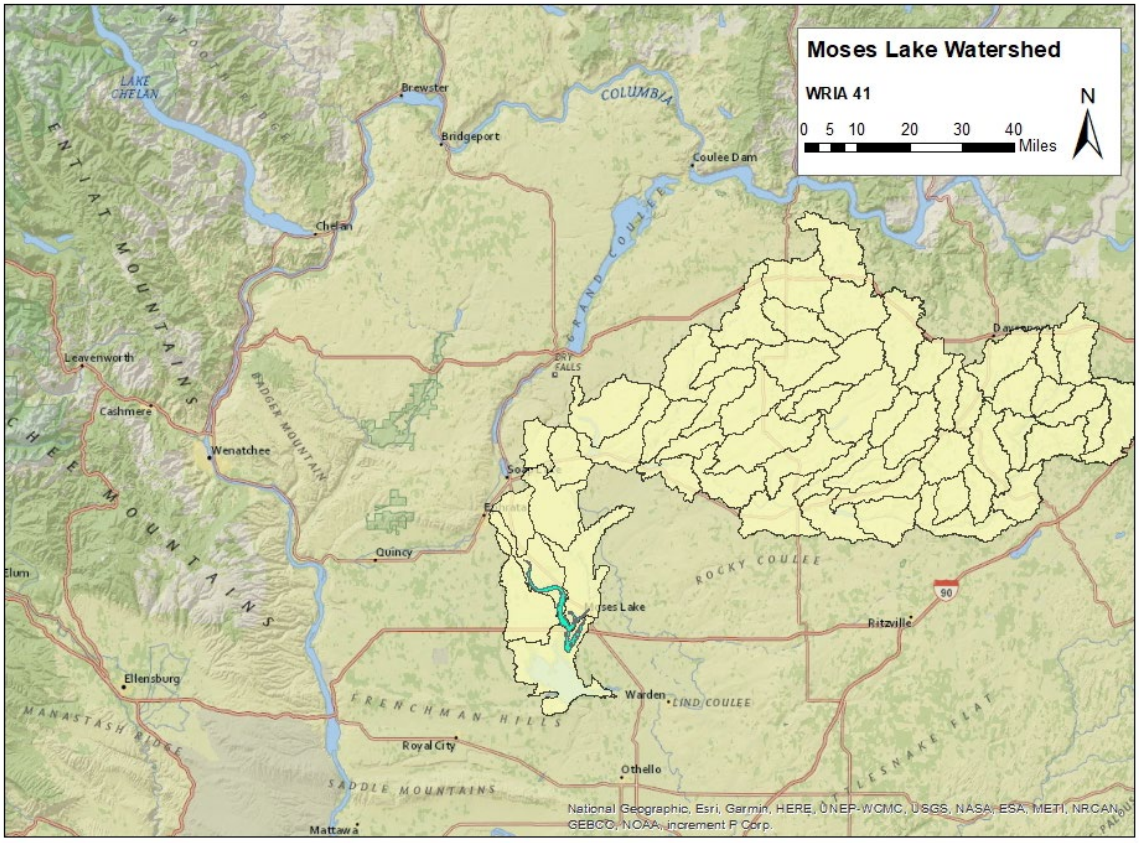

Figure 22. Map of the Moses Lake Watershed.

Implementing: Other Locally Led Partnership

Summary/Context Info:

Ecology is a member of the Moses Lake Watershed Council (MLWC). The Columbia Basin Conservation District (CBCD, formerly the Grant County Conservation District) leads the collaborative entity, formed in 2018 with the purpose of facilitating locally led water quality improvements in the Moses Lake Watershed. The MLWC has grown to include a diverse group of local, state, and federal stakeholders, including the Washington State Department of Ecology (Ecology), Moses Lake Irrigation and Rehabilitation District, Grant County Health District, City of Moses Lake, and the U.S. Bureau of Reclamation (USBR), along with representation from local tourism, businesses, and concerned citizens.

The MLWC was formed in direct response to persistent harmful algal blooms during summer months that impairs the public's use of Moses Lake and poses a great risk to public health and the health of pets and livestock. The MLWC is building on several decades of efforts studying Moses Lake's poor water quality. Work conducted by the University of Washington and the EPA Clean Lakes Project in the 1980's generated a large body of data and recommendations for

improving water quality. However, long-term management plans for the lake and watershed were not developed or implemented. Ecology issued a draft Total Maximum Daily Load (TMDL) plan in 2002, but the TMDL process was suspended in 2004 due to a lack of political and community support. Instead of resuming the TMDL process that failed in 2004, stakeholders, including state legislators, committed to supporting a collaborative, locally driven effort to address sources of phosphorus pollution and improving lake water quality.

Priority Actions:

Education and Outreach

- Developed and Implemented Public Information and Outreach Plan: Ecology and partners developed and implemented an Information and Outreach Plan, including developing a website with information on cyanobacteria and how to report an algae bloom, along with information and resources for residents to take action to protect the lake.
- Installed educational signs: The MLWC and Grant County Tourism Commission completed the installation of informational signs at six boat launches on Moses Lake before the 2022 summer season. The signs direct lake users to the appropriate websites for the latest information on blue-green algae, including the Grant County Health District's website for current lake conditions and the MLWC website to learn more about how to protect and improve water quality.
- Conducted community meeting: The MLWC held a “State of the Lake” meeting for the community in October 2022. MLWC members updated the public on the status of lake water quality and provided additional information about cyanobacteria, as well as current and planned monitoring and watershed projects.

Financial Assistance

- Completed Moses Lake Cyanobacteria Lake Management Plan (Ecology FY 21 Freshwater Algae Control Grant Program): CBCD adapted an existing lake model to evaluate possible effects of management practices and developed a comprehensive lake management plan to inform management decisions. The project was funded from July 1, 2020, to June 30, 2022.
- Completed assessment of the groundwater recharge sources of phosphorus in Rocky Ford Springs (USGS Cooperative Groundwater Study Phase I). A portion of the FY21 Moses Lake Cyanobacteria Lake Management Plan grant and funding from Ecology’s Office of the Columbia River (OCR) supported a Phase I USGS Cooperative Groundwater Study to delineate groundwater pathways through which phosphorus is transported to Moses Lake.
- Implemented the WaterSMART: Cooperative Watershed Management Program Phase I: CBCD’s grant from the Bureau of Reclamation’s WaterSmart Cooperative Watershed Management Phase I grant program became active in 2022. The MLWC began work to further develop the MLWC and develop a watershed restoration plan.

- Secured funding for phosphorus sequestration treatment: CBCD's $3.1 million dollar Community Project Funding Request to help improve Moses Lake's water quality was included in H.R. 8239, the FY2023 Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Bill. The project to improve Moses Lake's water quality includes phosphorus sequestration technology that will reduce phosphorus loading from Rocky Ford Creek, along with sediment and water quality monitoring to evaluate the impacts of the project. Funding for the project will be allocated through the Natural Resources Conservation Service to CBCD in 2023.

Partner Coordination

- Participate in the Moses Lake Watershed Council: The MLWC meets monthly. Subcommittees meet outside the regular meeting schedule to evaluate emerging technologies, data and monitoring, information and outreach, grants, and legislative activities.

Compliance Activities

- Respond to Non-Point Complaints: Ecology investigated complaints received through the Environmental Reporting System (ERTS) to confirm a pollution source. If confirmed, Ecology contacts landowners by phone and letter. After we send letters offering financial and technical assistance to landowners, the ERO team works to get on-site meetings with producers. These meetings are an opportunity to learn from landowners, identify key BMPs to protect water quality on the site, and discuss potential project plans and designs.
- Ensured Trout Lodge Agreed Order is Implemented: Ecology continued to work with Troutlodge Inc. to implement a 2020 Agreed Order for their two fish hatcheries (ELM 1 and ELM 2) on Rocky Ford Creek. The Order requires Troutlodge to evaluate potential sources of nutrient loading to Rocky Ford Creek from the hatcheries. Since issuing the Order, Troutlodge has developed a Quality Assurance Project Plan and submitted annual monitoring reports based on nutrient and flow data collected. Under the new Finfish General Permit (reissued in October 2021), Troutlodge has now expanded their sampling to include additional nutrient parameters. Their first full year of new data collection will occur in 2023. In 2022, Ecology performed a routine site inspection of the facility and reviewed their operations, solids management, and chemical storage and found both facilities are operating under the requirements of their permit. Ecology will continue to review the data and work with Troutlodge to ensure operations do not cause impairment to receiving waters. Troutlodge will continue to operate under their 2020 Agreed Order and the requirements of the Permit.

Monitoring Activities

- Partnered on Groundwater Nutrient Monitoring. During these sampling events, groundwater and surface water data was recorded and water samples collected in the watershed up-gradient of Moses Lake, including Crab Creek and Rocky Ford Creek

drainages. Samples were collected simultaneously with the Bureau of Reclamation to compare results, and if found to be equivalent, validate use of Reclamation-collected data in future project analyses.

- Partnered on Freshwater Algae Bloom Monitoring Program: Ecology continued to fund the Freshwater Algae Bloom Monitoring Program in partnership with the King County Environmental Laboratory. After confirming reports of algae blooms on Moses Lake, Grant County Health District collected and submitted six samples for cyanotoxin testing in 2022. Sample results were published on the Washington Toxic Algae website, as well as on the GCHD's website, and used for alerting the public to potential health hazards.

3.1.3 Complaint Response

Nonpoint specialists across the state use a similar approach to complaint response as does our watershed evaluation work. We first verify the complaint in the field by confirming the water quality problem. We then document the water quality problems and reach out to the owner of the site offering technical and financial assistance to implement appropriate fixes. Our regulatory tools serve as a backstop if water quality pollution problems cannot be addressed with proactive assistance.

During 2022, Ecology responded to a multitude of nonpoint source pollution related complaints received by our agency. Complaints, and follow-up to complaints, were tracked in the agency's Environmental Reporting and Tracking System (ERTS). Ecology received a variety of complaints on a wide range of activities including:

- Livestock
- Dairy/Waste
- Debris/Garbage
- Mud/silt/sediment/turbidity
- Herbicide/pesticide application
- Fertilizer
- Manure
- Tillage Pollution
- Stream Dredging

In total, Ecology nonpoint staff responded to over 85 agriculture related ERTS complaints and over 70 other types of complaints across the state.

3.1.4 Support No Discharge Zone Implementation for Puget Sound

In 2022, Ecology continued to implement the Puget Sound Vessel Sewage No Discharge Zone (NDZ) rule, which was adopted on April 9, 2018, and became effective May 10, 2018 (Chapter 173-228 WAC). The NDZ includes marine waters of Washington State inward from the line between New Dungeness Lighthouse and the Discovery Island Lighthouse to the Canadian border, and fresh waters of Lake Washington, Lake Union, and the connecting waters between and to Puget Sound.

Figure 23. No Discharge Zone sign used to educate boaters accessing Puget Sound.

The NDZ means that vessels cannot discharge sewage (toilet water/blackwater) anywhere within the zone, whether treated or not. All boats and vessels have to store their sewage until they can safely dispose of it at an onshore or mobile pumpout facility or hold it until it can be discharged outside the NDZ and beyond three miles from shore. The NDZ Rule included a delayed implementation for certain commercial vessels until May 10, 2023, to comply due to the more extensive retrofits and costs. These include tugboats, commercial fishing boats, small commercial passenger vessels and NOAA research and survey vessels. Ecology has reached out to these vessel sectors to remind them of the upcoming data, and we have provided information for commercial vessels on our website including pumpout options for commercial vessels including commercial marine work companies with trucks and barges that service large commercial vessels.

Ecology leads two committees to help implement the NDZ and continues to work closely with committee partners to get the word out on the NDZ. In 2019, Ecology, with input from the NDZ Education and Outreach Committee, prepared a Request for Proposal and awarded the contract for a social marketing research study to identify barriers to NDZ compliance and inform the development of a coordinated multi-media campaign creating a more effective branding identity for the NDZ going forward. The research study was conducted during 2020 and involved focused interviews and two separate online surveys, culminating in a set of recommendations to Ecology. In 2021, Ecology's NDZ Project Team updated the NDZ Implementation Plan to include actions informed by the 2020 study and implemented a

considerable number of those actions throughout 2021. Ecology rolled out the Pump Out, Don't Dump Out campaign[17] over the spring and summer of 2021, which included sharing the new NDZ logo, webpage, infographics (visually describing why the NDZ matters), a video[18], magazine ads, social media posts, a blog post and the existing Pumpout Nav app[19] that was updated to include the NDZ boundary. Ecology also provided information about the NDZ at a number of virtual events, such as water quality meetings in Skagit and Jefferson Counties. The 2020 study determined that the most effective method for reminding recreational boaters about the NDZ and how to manage vessel sewage would be through placed-based signage. Therefore, in early 2021 Ecology created, and had printed, over 400 aluminum signs of various sizes[20] (plus large magnets and decals) with the intention to install them at boat launches and marinas, where boaters will see them before boarding a vessel. The team then coordinated with marinas, cities, and counties across Puget Sound to find good sign locations and deployed almost the entire set of signs over the Summer and Fall. The signs were free for the entities installing them since Ecology was able to use NEP funds to print them. In 2022, Ecology continued the Pump Out, Don't Dump Out campaign including attending in-person boating events, and continuing to get signs out to more boat launches and marinas.

In addition, based on the findings and recommendations from the Social Marketing study, we conducted listening sessions with several marina managers in order to develop a Y-Valve education program. As a result, we designed the Y-Valve Education Pilot Program[21] as well as the resources needed to implement the program.

The program is designed to help participating marinas and yacht clubs educate boaters about their Y-Valves, marine sanitation devices, and best practices for managing blackwater.

We provide participating marinas and yacht clubs with complimentary resources such as dye tabs, zip ties, signage, and other educational materials. To advertise the program, we ran Ads in boating magazines, visited marinas and attend several boating events such as the Seattle Boat Show. We have recruited some marinas and yacht clubs to participate in the program. The program will effectively launch boating season 2023.

[17] https://ecology.wa.gov/Water-Shorelines/Puget-Sound/No-discharge-zone/pump-out-dont-dump-out
[18] https://youtu.be/wIwd37N1l4s
[19] https://apps.apple.com/us/app/pumpout-nav/id1148752109.
[20] https://ecology.wa.gov/Blog/Posts/September-2021/There-s-a-new-sign-for-a-healthier-Puget-Sound
[21] https://ecology.wa.gov/Water-Shorelines/Puget-Sound/No-discharge-zone/pump-out-dont-dump-out/Y-Valve-education-pilot

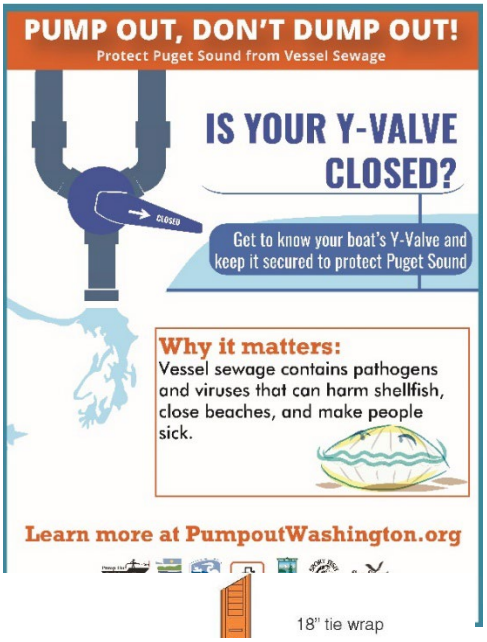

Figure 26. Examples of Boat Pump Out Signs

Figure 24. Examples of Boat Pump Out Signs

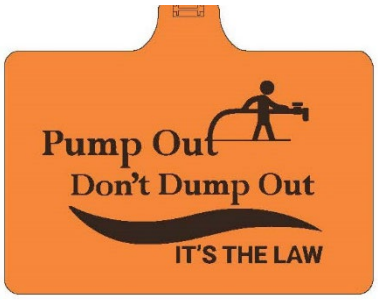

Figure 25. Examples of Boat Pump Out Signs

In 2021, Ecology finalized the first NDZ Enforcement Strategy which includes an Enforcement Plan, supporting documents such as an example County marine sewage ordinance, and suggestions for how each partner agency could play a role. Ecology also provided training to our SWRO and NWRO ERTS Coordinators, so they are better equipped to ask vessel-specific questions when documenting a report of potential or actual vessel sewage discharge within the NDZ. In 2022, Ecology worked with municipalities to conduct education and outreach as well as monetary penalties in response to several vessel discharge reports.

On November 30, 2020, the United States District Court Judge for the District of Columbia remanded the administrative record to EPA for further consideration on the American Waterways Operator's appeal of EPA's determination that allowed the establishment of the Puget Sound NDZ. The District Court ordered EPA to further analyze cost and treatment considerations within 90 days. The District Court also ruled that the NDZ will continue to be in place while EPA gathers the additional information.). As a result of the court order, Ecology worked diligently in December 2020 to prepare the additional information requested by EPA, which focused on the treatment of pumped vessel sewage and on costs associated with

pumping and disposal. On March 1, 2021, EPA filed a status report informing the Court that it had completed its further consideration of the issues set forth in the summary judgment order. Based on that further consideration, EPA reaffirmed its determination[22] that adequate facilities for the safe and sanitary removal and treatment of sewage from all vessels are reasonably available in Puget Sound. In February of 2022, the US District Court in Washington D.C. upheld the NDZ ending the court challenge.

More information about the Puget Sound NDZ, including guidance for recreational and commercial boaters, can be found on the NDZ webpage[23].

Figure 27. New No Discharge Zone logo created by Department of Ecology.

Figure 28. NDZ Sign recipient at Port of Poulsbo (left).

Figure 29. NDZ Sign recipient at Semiahmoo Marina (right).

[22] https://ecology.wa.gov/Blog/Posts/March-2021/No-Discharge-Zone-continues-to-protect-Puget-Sound
[23] https://ecology.wa.gov/Water-Shorelines/Puget-Sound/No-discharge-zone

3.1.5 Support implementation of the Dairy Nutrient Management Program; Ecology and WSDA continue to work on the gaps identified in the Dairy Nutrient Management Act

The Department of Ecology (Ecology) and Washington State Department of Agriculture (WSDA) continued to operate under a Memorandum of Understanding (MOU) to address livestock related water quality issues. The MOU was established as a coordinating document consider that Ecology and WSDA have overlapping regulatory responsibilities for water quality compliance related to livestock activities namely dairy operations.

In 2022, the WSDA Dairy Nutrient Management Program continued to notify Ecology staff when dairies discharged to state waters and when former dairy facilities cancelled their milking license. This allows Ecology to provide follow-up technical assistance and ensure management of livestock and manure on the sites is adequate to protect nearby surface water. Agency staff also continue to coordinate and collaborate on efforts to address livestock and manure related nonpoint source pollution issues.

3.2 Goal 2: Ensure Clear Standards

3.2.1 Identify best management practices (BMPs) and measures designed to comply with the Water Quality Standards and contribute to the protection of beneficial uses of the receiving waters and ensure compliance with state and federal law. Utilize best available science.

3.2.2 Implementation of forest practices rules statewide: periodic reviews of the Forest Practices Rules adaptive management program and the Clean Water Act Assurances

Ecology helps ensure that the Forest Practices Rules are effective in protecting water quality and meet federal and state water quality standards. These rules help protect streams, wetlands, and other bodies of water in or near forest areas and in-stream fish habitat.

Ecology provides:

- Field inspectors to help the Department of Natural Resources ensure rules are followed.
- Forest practices effectiveness monitoring and policy analysts who participate in the Forest Practices' adaptive management program.[24]

The Forest Practices Rules provide standards to:

- Preserve trees in streamside areas to keep the water cool.
- Improve in-stream fish habitat by providing woody debris and controlling pesticide use near water bodies.

[24] Covered below in section 3.2.2.

- Encourage proper construction and care of forest roads to prevent silt from entering water.

Regional staff/inspectors engaged in the following activities to support the implementation and enforcement of the forest practice rules:

- Participated in field review and data collection of forest practice activities to determine compliance with the rules. Inspectors worked throughout all six DNR Regions. Prior to field visits inspectors conducted in-office FPA reviews.
- Reviewed individual forest practice applications.
- Reviewed and provided input on Compliance Monitoring Program reports and documents and participated in site-compliance inspections.
- Participated in meetings and work sessions to implement a stream typing prioritization plan and procedures for coordinating between landowners and reviewers prior to stream protocol surveys.
- Performed field inspections of selected streams, providing concurrence or recommendations for alternate points to be used to define where fish habitat exists, and where the end of perennial water occurs in order to apply different harvest prescriptions.
- Provided staff to assist DNR in evaluating readiness of counties to assume jurisdiction for forest practices within their urban growth boundaries.
- Collaboratively participated with DNR, and WDFW staff and representatives of affected Indian tribes, to identify the need for and participate in interdisciplinary teams and field inspections for conducting site-specific evaluation of compliance with the forest practices rules.

3.2.3 Forest Practices

Under Washington state law (Chapter 90.48 RCW) forest practices rules are to be developed to achieve compliance with the state water quality standards and the federal Clean Water Act (CWA). Ecology established Clean Water Act assurances (CWA assurances) for the state's forest practices program in 1999 as part of the Forests and Fish Report (FFR) and subsequent legislation known as the Forests and Fish Law. This legislation amended the existing Forest Practices Act (Chapter 76.09 RCW).

The CWA assurances established that the state's forest practices rules and programs, as updated through a formal adaptive management program, would be used as the primary mechanism for bringing and maintaining forested watersheds into compliance with the state water quality standards.

Taken in total, the forest practices Adaptive Management Program (AMP) provides a substantial framework for ensuring forest practices are complaint with the water quality standards. In 2009, as part of a review of the AMP, Ecology concluded it is in the best interests of water quality, and is consistent with legislative intent, to work together with cooperating agencies and stakeholders to make needed improvements to the existing program. Ecology

therefore conditionally extended the CWA assurances with the intent to stimulate the needed improvements to the forest practices program and AMP.

Ecology, in consultation with key stakeholders, established specific corrective milestones. The extension of these assurances was conditioned on meeting these administrative and research milestones by the specific target dates described. With these corrective milestones in place, Ecology extended the CWA assurances until 2019.

Progress towards completing the remaining corrective milestones has remained slower than intended but continued to move forward. The causes of not meeting the scheduled target dates include, new and competing priorities; such as, the additional work related to ensuring forestry is not increasing the risk of mass wasting, work on a large proposal to establish separate requirements for small forest landowners, and a renewed focus on developing field methods for identifying points on streams that represent the end of fish habitat (with fish habitat receiving higher protection under the rules).

On December 2, 2019, Ecology Director Bellon sent a letter to the Forest Practices Board (available upon request) granting a second extension for two years (ending December 2021) based on the completion or near completion of several key Type N research projects providing enough information for the board to consider new rulemaking with regard to riparian buffers on non-fish bearing waters. As the result of the completion and acceptance of one of the studies a technical workgroup was contracted to develop recommended harvest prescriptions to help inform rule making. The workgroup completed its work and presented the final report to TFW Policy at the June 2021 Policy meeting.

On February 23, 2021, the Washington State Auditor's Office issued a performance audit report describing issues that continue to plague the AMP. The Auditor's Office concluded that the program is not "operating as intended" and that, without needed changes, the "program would continue to languish." The Audit Report contains several recommendations designed to get the program on track so that it can perform its functions as intended. The Forest Practices Board (Board) has committed to addressing many of these recommendations and the Department of Natural Resources included a funding request in 21-23BN budget.

In consideration of the continued progress at Policy and the Boards commitment to the Auditors Report Ecology Director Watson issued in a memo to the Board (Appendix C), an additional one year extension of the CWA Assurances. This extension was contingent on the AMP making measurable progress on implementing the 2021 Audit Report and Policy making a final recommendation on Type Np buffer prescriptions to the Board, with the Board directing staff to develop a rule package and prepare a CR102.

Despite a lengthy dispute resolution process, where a consensus recommendation to the Board was not reached, a minority and majority report were forwarded to the board for consideration at their November 2022 meeting. The board chose to move the majority recommendation forward for draft rule development and CR102. Additionally, the adaptive management program has been making steady progress on program and process improvements as

recommended in the SAO Audit Report. Due to these measures of the 2021 extension by Director Watson, Ecology has extended the assurances pursuant to progress related to the Type Np CR 102 development, leading the board approving new Type Np rules that provided greater protection to stream temperature than the current rule.

Appendix A – Appendix A shows a table of corrective milestones, and their status as was reported to the Washington Forest Practices Board at their May 2022 meeting. There have been no significant changes to the status of the corrective milestones since the last report. The 2023 milestones update to the Board will be delivered at the August 2023 Board meeting.

3.2.4 Agricultural – Voluntary Clean Water BMP Guidance

The development of clear, standalone, clean water BMP guidance for agricultural sources is a key enhancement for our nonpoint source (NPS) pollution program. The Voluntary Clean Water Guidance is intended to be a technical resource for the agricultural community and to complement existing guidance on agricultural conservation practices, such as the Natural Resources Conservation Service (NRCS) Field Office Technical Guides (FOTGs). Compared to other guidance documents, its focus is on how BMPs can protect water quality and support meeting the Washington state water quality standards.

Ecology's goal is to run a process that interested parties and stakeholders believe is fair, inclusive, and respectful, that will result in robust, scientifically-based guidance which farmers will be amenable to implement, that will meet water quality standards by preventing pollution discharge at the parcel level. We are developing the guidance in a series of chapters with ongoing collaboration from an advisory group. The advisory group include representatives from the National Resource Conservation Service (NRCS), Conservation Districts, Washington State Department of Agriculture, State Conservation Commission, Washington State University, farmers, dairies, cattle groups, US Environmental Protection Agency, the Washington State Department of Fish and Wildlife, the Northwest Indian Fisheries Commission, and other agricultural and conservation experts.

The guidance's focus is on inventorying existing BMPs, refining those BMPs (if needed), and then assembling the BMPs into combinations that adequately address all sources of pollutants for a particular land use. The guidance will cover a range of conservation practices and include topics, such as nutrient management, sediment control, water management, livestock management, and riparian buffers. Each chapter will address different conservation practices and provide information on:

- Practices that best prevent water pollution and protect water quality.
- How well BMPs perform in reducing specific pollutants.
- Considerations for when implementing BMPs, such as costs and equipment requirements.

2022 marked a significant milestone. Ecology completed four chapters of the guidance and submitted those chapters to EPA by the end of the year. To get these chapters out we held six

advisory group meetings. A public comment period was held in December. We completed a response to comments and submitted the chapters to EPA as a part of the 2022 Nonpoint Plan Update. The following chapters were completed:

- Cropping Methods: Tillage & Residue Management
- Livestock Management — Pasture & Rangeland Grazing
- Sediment Control: Soil Stabilization & Sediment Capture (Structural)
- Riparian Areas & Surface Water Protection

More information on the guidance[25] and the advisory groups can be found at the Voluntary Clean Water Guidance for Agriculture webpage.[26]

3.3 Goal 3: Develop and Strengthen Partnerships

3.3.1 Strengthen Relationships and Receive Input from Stakeholders

Ecology recognizes the need for strong partnerships and input from stakeholders to effectively implement our nonpoint source program. Many of those efforts are detailed in other sections of this report. We are looking to highlight our activities related to key groups and partners:

3.3.2 Agricultural and Water Quality Advisory Committee

The Agriculture and Water Quality Advisory Committee was established to provide the Ecology Director with a direct line to producers and producer groups and discuss how we can both support a healthy industry and protect clean water. The committee provides input to help guide the director's efforts to improve Ecology's relationship with the agricultural community and inform us on how we can do our work to better respond to concerns from producers. A broad array of agriculture stakeholders participate on our committee. The committee has open dialogue about issues affecting the industry and how they intersect with our work to prevent water pollution.

This committee provides an open forum for agriculture producers and environmental interest groups to meet our staff and learn about our work. They provide valuable feedback as we tackle the challenge of insuring that working lands keep working in an environmentally friendly way.

In 2022, the committee met virtually on April 14 and October 13th. The committee has been successful at further improving our agencies relationship with agriculture and creating a more positive environment to implement our nonpoint program including increased acceptance and support for our watershed evaluation and TMDL implementation work, and support for the creation of the Voluntary Clean Water Guidance for agriculture.

[25] https://apps.ecology.wa.gov/publications/SummaryPages/2010008.html
[26] https://ecology.wa.gov/About-us/Accountability-transparency/Partnerships-committees/Voluntary-Clean-Water-Guidance-for-Agriculture-Adv

During the April meeting, the agenda included:

- Stockwater Policy (water resources/water quality).
- Oakland Bay- Update group on our response to concerns raised at the last meeting related to a farm that was discharging pollution to Oakland Bay, shellfish bed status, and current implementation work.
- Nonpoint Plan and Voluntary Clean Water Guidance.
- Governor's Office Riparian Process
- CAFO permit
- Regional Field work

At the October meeting, the agenda included:

- Nonpoint Plan Update and Voluntary Clean Water Guidance for Agriculture
- Keeping Skagit Valley Wild and Cool social marketing effort
- Information on the wetlands inventory work being performed by the Shorelines and Environmental Assistance Program
- Washington's 2018 Water Quality Assessment
- Food and Farm tour update
- Regional field work
- CAFO permit

You may view more detailed information on each meeting and the committee on the Agriculture and Water Quality Advisory Committee webpage[27].

3.3.3 Financial Assistance Council (FAC) and Water Quality Partnership (WQP)

The FAC and WQP continue to be key forums for informing stakeholders on our nonpoint program. These groups continue to be successful in helping us coordinate and build relationships with key stakeholders.

We held one FAC meeting this year on February 23, 2022. Additionally, we sent out written updates to the group in the summer and fall in lieu of in person meetings.

We held four WQP meetings in 2022 on March 24, June 16, September 22, and December 8. Please visit the Water Quality Partnership webpage[28] for more information on meetings.

[27] https://ecology.wa.gov/About-us/Accountability-transparency/Partnerships-committees/Agriculture-and-Water-Quality-Advisory-Committee

[28] https://www.ezview.wa.gov/site/alias__1962/view_our_committees_water_quality_partnership/37053/water_quality_partnership.aspx

3.3.4 Puget Sound Nutrient Forum (Forum)

This effort focus on building and strengthening relationships with regional stakeholders, tribes, the regulated community, industry, and the public. Nutrient management efforts in other large U.S. coastal estuaries have emphasized the importance of focused stakeholder engagement to build a common understanding of nutrient over-enrichment problems and potential solutions. We believe that a successful outcome for Puget Sound will rely in large part upon this engagement process, and the feedback we have received from attendees has been largely positive.

We held two Forums in 2022. For more information on the Forum meetings, please visit: https://www.ezview.wa.gov/DesktopDefault.aspx?alias=1962&pageid=37106

3.3.5 Regional Conservation Partnership Program

We have continued to support the Palouse Conservation District's implementation of RCPP. In 2021, USDA's Natural Resources Conservation Service (NRCS) renewed the Palouse River Watershed (WRIA 34) Implementation Partnership and provided an additional $5.5 million to improve water quality, soil health, and habitat in the Palouse River Watershed. This builds on the $5.5 million that was awarded to the Partnership at the program's inception in 2014. Palouse River Watershed RCPP is a voluntary program directed through the Natural Resource Conservation Service (NRCS) designed to benefit water quality, soi l health, and habitat within the Palouse River Watershed. The primary practices targeted with RCPP include; conservation tillage (reduced tillage/ no till), nutrient management, integrated pest management, cover crops and riparian forest buffers.

In the fall of 2022, the RCPP held its first signup of the renewal. PCD engaged with partners to conduct multiple outreach events across the Palouse Watershed. The signup ran concurrently with WA NRCS EQIP signup which enabled producers to compete consecutively in both funding pools. The PCD received more interest in signup than the RCPP could fund in a single year which demonstrates a need for the program. The primary practices that producers are interested included conservation tillage, nutrient management, and integrated pest management. Ranking and obligation will be done in 2023 for these producers. In addition, PCD will run another RCPP signup in 2023.

3.3.6 Strengthen Relationships with Tribes

Coordination between tribal, state, and local governments is important to the successful management of resources, including water quality. In 2022 in an effort to better coordinate with tribal natural resource management staff we started hosting virtual meetings to highlight what projects we are working on related to our 303d program (TMDLs/WQ Standards/Assessment) and nonpoint program.

Additionally in 2022:

- We hosted a webinar with tribes to provide information on the Nonpoint Source Pollution Plan update and the Voluntary Clean Water Guidance for Agriculture. Pre-public drafts of these documents were shared with tribes.
- An employee with the NWIFC continued to participate as a member of the Voluntary Clean Water Guidance advisory group.
- We collaboratively participated with DNR, and WDFW staff and representatives of affected Indian tribes, to identify the need for and participate in interdisciplinary teams and field inspections for conducting site-specific evaluation of compliance with the forest practices rules.
- Nonpoint source watershed projects awarded grants for SFY 2023 offered to Sauk-Suiattle Indian Tribe and Spokane Tribe of Indians.
- Our eastern regional office coordinated with the Spokane Tribe on the Hangman Watershed efforts and with the Kalispell tribe on the Pend Oreille River efforts.
- Our northwest office coordinated with the Lummi Nation and Nooksack Tribe through the Whatcom Clean Water Program, are looking forward to supporting the Upper Skagit Indian Tribe in their work with Skagit Count to Develop an East Fork Nookachamps Watershed plan (we also collected data in Turner creek in coordination with the Upper Skagit Indian Tribe), coordinated sampling efforts with the Stillaguamish and Tulip Tribes in the South Skagit Bay Watershed, coordinated sampling efforts with the Samish Tribe, and coordinated with tribes through the Clean Samish Initiative.
- Our southwest regional office we continued to coordinate and keep tribes informed about our implementation efforts in several focus watersheds including our work implementing the Puyallup Watershed Fecal Coliform TMDL (Muckleshoot Tribe), Oakland Bay (Squaxin Island Tribe), Skokomish Valley and Annas Bay (Skokomish Tribe), and Nisqually River and Ohop Creek (Nisqually Indian Tribe). We also co-wrote the Lower White River pH TMDL with the Muckleshoot Indian Tribe.

3.3.7 Communicating Nonpoint Successes

We did not complete any success stories this year because of staff vacancies. We are hoping to get communications staff hired and when that is completed, we will pick up work on communicating the nonpoint success.

3.4 Goal 4: Monitor Waters for Nonpoint Source Impairments, and Program Effectiveness

3.4.1 Continue Monitoring Efforts/Effectiveness Monitoring

In 2022 Ecology focused effectiveness monitoring efforts in the Snohomish River watershed. We studied several creeks in the watershed to assess the effectiveness of efforts to reduce bacterial pollution. We collected water samples at 36 sites across the following tributary areas:

- Allen Creek
- Quilceda Creek
- Woods Creek
- French Creek
- Pilchuck River
- The Marshlands

Our Interactive Story Map: Bacterial Pollution in the Lower Snohomish Basin[29] describes the study, and the Quality Assurance Project Plan: Lower Snohomish River Tributaries Fecal Coliform Bacteria Effectiveness Monitoring[30] contains the detailed study plan. Additionally the study data[31] is available to the public.

3.5 Goal 5: Administering the Nonpoint Source Program effectively and efficiently as possible

3.5.1 Nonpoint & Implementation Tracking System

To assist Ecology's efforts to reduce nonpoint source pollution and implement TMDLs, field staff routinely conduct windshield surveys in priority watersheds to assess conditions that may be negatively affecting water quality. These staff also respond to water quality related environmental complaints from the public.

When field staff conduct windshield surveys and complaint responses, they typically document conditions that lead to nonpoint pollution and collect a variety of site information such a field notes and photographs. These efforts also require staff to manage additional information such as communications with property owners and related documents such as letter or other correspondences. To meet both staff and programmatic needs to better collect, store and track nonpoint data in a consistent and streamlined manner and manage data in a way that can be integrated with other water quality efforts such as TMDLs, the Program invested in the development of a state-wide system to collect and store nonpoint data.

[29] https://storymaps.arcgis.com/stories/e5a06457a3744485b39babf7fb68cf04
[30] https://apps.ecology.wa.gov/publications/SummaryPages/2103107.html
[31] https://apps.ecology.wa.gov/eim/search/Eim/EIMSearchResults.aspx?ResultType=EIMTabs&StudySystemIds=99972243&StudyUserIdSearchType=Equals&StudyUserIds=EFF_LSRT

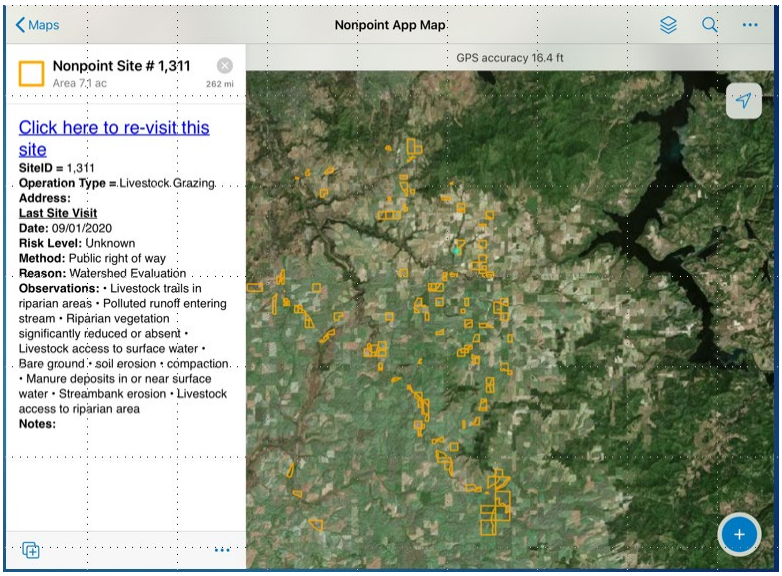

Figure 30. Screen view of the Nonpoint Collector Application shows how Ecology staff can track site visits at particular locations.

The statewide system includes the following components:

1. Mobile applications to view, collect and submit data in the field via cloud-based services.

2. Web application to view, manage, track and report data.

3. Internal database to store all records/data.

Key nonpoint data to be collected and managed includes:

- Field observations and notes
- Photographs (geo-located)
- Communications with property owners
- Best management practice implemented.

Benefits of this system are:

- Streamlined data collection in the field & reduction in equipment needed.
- Increased data quality and consistency (across all regional offices)
- Simplified data management including data automation.
- Field access to important information
- Ability to input, store and manage all nonpoint data in a single Ecology database.
- Centralized location for pulling nonpoint data and information.
- Improved ability to track efforts, produce reports and evaluate progress.

- Increased ability to utilize, integrate and synthesize data e.g., spatial information
- Elimination of the need for long-term, cloud-based data storage

The Water Quality Program has completed and deployed the nonpoint data management system and field staff have been trained and are using the system as their primary tool for data collection and management. Additionally, we successfully added over five years of previously collected data to the statewide system including spatial locations, site level observations and photos.

Having a single, statewide single system used by all nonpoint staff has many clear advantages. It supports better data consistency and quality, creates predictability in the way nonpoint field work is conducted and significantly increases data accessibility to both staff and management. It also helps with continuity and gaps when staff turnover occurs. Equally important is the actual data that is collected and managed. This information allows users to better assess changes over time at the site and watershed levels to help determine if water quality is improving and can easily be integrated into other watershed level activities such as TMDLs, effectiveness monitoring, source identification monitoring and other project planning and implementation efforts. The system also helps us collect information necessary to meet our reporting requirements found in the settlement agreement.

Future enhancements to the system are planned in the coming year and will focus on tracking BMP recommendations, identifying sites prioritized for follow-up and checking progress toward compliance.

3.5.2 Administer grants and loans

Chapter 2 of this report includes information on our program administration and identifies funded activities and BMPs related to our Section 319 Grant. Please review that chapter for more information on the progress we made on Goal 5. Additionally, information has been reported through the Grants Reporting and Tracking System (GRTS).

Chapter 4: Conclusions

In 2022, the State of Washington made considerable progress in protecting water quality from nonpoint source pollution. In Washington State one of our greatest strengths is that we have dedicated staff and partners who are committed to working collaboratively to reduce the scope and scale of NPS pollution. This cooperative, solution-oriented environment encourages innovation and adaptation in addressing both longstanding and emerging water quality challenges.

Throughout our NPS management strategy, there is a focus on implementation and clear standards. Moreover, there is an increased emphasis on greater regulatory clarity around what actions are necessary to prevent pollutants from reaching state waters and ensure compliance with the water quality standards. This year we achieved a significant milestone in providing more clarity on agricultural BMPs. We finalized and submitted to EPA the four chapters of the Voluntary Clean Water Guidance for Agriculture—including the chapter with our recommendations for riparian buffers.

As EPA is well aware, water quality protection efforts inherently face significant ongoing social, financial and technical challenges. We are continuing to better refine the right balance of technical assistance, financial assistance, and the use of enforcement tools. Our approach of actively identifying pollution sources in watersheds through watershed evaluations, and then contacting producers and landowners continues to be more standardized around the state. We are utilizing this proactive approach to educate the public about the role they play in protecting water quality to the benefit of their communities. Providing technical assistance and promoting available financial assistance to encourage the implementation of effective BMPs represents the bulk of our work.

However, technical and financial assistance will only get you so far. It is critical to have an active and consistent regulatory presence in watersheds in order to be successful in resorting and protecting water quality. This need for a regulatory backstop was again highlighted this year. In watersheds where we use regulatory tools there is more proactive implementation of effective BMPs across the watershed. We continue to increase our regulatory backstop to support our proactive technical assistance and financial assistance efforts. In 2022, Ecology issued twenty-two warning letters, three administrative orders and one penalty to agricultural producers with track records of noncompliance and an unwillingness to take advantage of technical and financial assistance resources.

Utilizing the full suite of tools (technical assistance/financial assistance/enforcement) is the key to success. Again, if staff only use technical assistance and financial assistance tools, implementation is generally limited to those that are predisposed to resource protection and willing to change how they manage their land. Likewise, if we only act in an enforcement role, we sacrifice our long-term ability to effectively work in a watershed. It is not effective to be confined to an adversarial role—being able to also wear technical assistance and financial

assistance hats allows us to act in a more collaborative and problem solving role and maintain constructive partnerships in the watersheds where we work.

The 319 funding Washington receives is critical for helping our field staff get effective BMPS on the landscape. There are many other voluntary programs available that have significant amounts of funding but to date they are no designed to meet State Water Quality Standards. This means the 319 funding continues to be an essential part of Washington's efforts to meet state water quality standards. The need to fund BMPS that protect water quality is critical.

The enormity of the NPS pollution problem in Washington State requires that we continually strive to improve our programs, policies, and tools. Again, on that front marked a significant milestone in finalizing and submitting to EPA an update of our Nonpoint Plan. Further, the many advancements outlined in this report show that we are on the right track. In 2023, we look forward to continuing our nonpoint efforts through monitoring, watershed evaluations, water cleanup implementation, and grants. We will continue work on the Voluntary Clean Water Guidance. Moving forward, this guidance will serve as an important asset in efforts to reduce NPS pollution form agricultural sources and we look forward to completing an entire set of these chapters by 2025.

Our funding program continues to be successful, responsibly managed and a model for using public dollars to facilitate the implementation of the most effective BMPs. We will continue our efforts in aligning our funding guidelines with our new guidance and BMP recommendations.

Nevertheless, we can and will do more to advance water quality protection in Washington State. We know that opportunities exist to build on our successes, and we continue to work towards improving the following elements of our nonpoint program:

- Better communicate our strategy and goals to the public
- Further refine the tools we use to document and track water quality problems in watersheds.
- Improve the strategies we use to achieve clean water goals in priority watersheds.
- Better communicate the successes achieved by our NPS management program in order to facilitate further acceptance and adoption of effective NPS pollution controls throughout the state.

In all these regards, the continued financial and technical support we receive from EPA has been and will remain critical to supporting both the staff and the actions needed to implement our Nonpoint Source Management Plan and achieve clean water goals throughout the State of Washington.

Appendix A. Forest Practices Board Results

There have been no significant changes to the status of the corrective milestones since the last report. The 2023 milestones update to the Board will be delivered at the August 2023 Board meeting.

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DEPARTMENT OF ECOLOGY
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April 26, 2021

TO: Forest Practices Board

FROM: Brandon Austin, Forest Policy Lead

SUBJECT: Clean Water Act Milestone Update

The Washington State Department of Ecology (Ecology) committed to provide the Forest PracticesBoard (Board) with periodic updates on progress being made to meet corrective milestones established for retaining the Clean Water Act 303(d) Assurances (Assurances) for the Forest Practices Rules (Title 222 WAC) and Programmatic Habitat Conservation Plan (HCP, 2006). The last update to the Board was in May 2019. Since that time the Director of the Department of Ecology sent the attached letter to the Forest Practices Board extending the assurances until December 2021. In addition to the expectation the rules are updated address completed science from the Cooperative Monitoring, Evaluation and Research Committee (CMER), the letter stated that continued progress on the milestones is critical, especially those research milestones that showwhether the rules are achieving water quality.

Under state law (RCW 90.48.420(1)) the adoption of "forest practices rules pertaining to water quality by the forest practices board shall be accomplished after reaching agreement with the director of the department *(Ecology)* or the director's designee on the board… so that compliancewith such forest practice[s] rules will achieve compliance with water pollution control laws".

This directive is integral to meeting legislative intent to use the Forest Practices Rules affecting water quality protection to satisfy requirements of section 208, 209, and 305 of the federal CleanWater Act, as regards silvicultural activities (RCW 90.48.425) and to achieve compliance with all applicable requirements of federal and state law with respect to nonpoint sources of water pollution from forest practices" (RCW 76.09.010(2)).

The Forests and Fish Report (FFR), adopted by the Board under direction of RCW 77.85, includes the goal to meet the requirements of the Clean Water Act for water quality on non-federalforest lands and using the Adaptive Management Program (AMP) to revise the rules as needed.The FFR, with this goal and the performance target of meeting the state standards, was

subsequently incorporated into the HCP (Introduction and Implementation Agreement clause 10.1).

As part of the FFR, Ecology recognized the proposed rules would improve water quality protectionand may meet water quality standards long term, reducing the urgency to develop TMDLs.

Ecology provided assurances to landowners that the new regulations would be relied on to protect water quality for a 10-year period (until July 1, 2009) while the rules were tested. This was believed to provide adequate time to determine if the rules are effective in achieving water quality.

In 2009 Ecology completed our review of the implementation of the rules and concluded that we could not state that the rules were achieving water quality. Based on the belief the AMP was still capable of testing the rules we established these corrective milestones to serve as benchmarks that if met, would provide us with a level of confidence that the rules were working. Ecology decided to extend the Clean Water Act Assurance for an additional 10 year period, to 2019. The 2009 corrective milestones were established to create a framework for making steady progress in gathering information critical for assessing the effectiveness of the rules in protecting water qualityas mandated by state law. Equally important was the intention to stimulate changes that would result in a more effective research program to test the rules consistent with adaptive management and adjust the rules in a timely fashion, through Policy and Board action.

The Assurances are based on the premise that given the mandates in state law (RCW 76.09.370(7))Ecology and the EPA can rely on the AMP to use sound scientific principles to test the effectiveness of the FFR-based rules in meeting water quality standards, and “to make adjustmentsas quickly as possible to forest practices” if they are ineffective. It has been more than 20 years since the Assurances were first granted, but water quality aspects for many of the rules remain untested.

In 2019, based on the charter timeline and formation of the *Timber Fish and Wildlife Policy Technical Type N Prescriptions Workgroup*, Ecology granted an additional 2 year extension of theAssurances with the expectation a CR 101 be filed by this summer and a draft CR 102 would be available for public review by the end of the year. At the November 2020 Board meeting, DNR staff presented a work schedule that did not contain the CR 102. Ecology voted no on acceptance of this work schedule. A timeline for rule making has since been developed but does not meet the expectations stated in the 2019 Ecology memo to this Board. Ecology will need certainty the AMPcan be relied on to meet the expectations previously stated, and the expectations of the legislature.

In addition, this memo from the Ecology Director stated the following:

> *Ecology believes that, in addition to committing to rulemaking to protect water temperature on Type N streams, improvements to the Adaptive Management Program Process are necessary to create a*

program that participants can rely on to test the effectiveness of the rules in protecting water quality and to finally modify those rules as science dictates. Therefore, we urge the Board and the Adaptive Management ProgramCooperators to identify and implement system improvements, over this two year period,and to continue to prioritize the completion of the remaining uncompleted research milestones identified in the 2009 Assurances review.

Enclosed are two tables showing the milestones and their current status. Points of note are highlighted in red and reflect changes since our last briefing in 2019:

- Table 1 shows the CMER Research Milestones. Scoping, study design, implement and complete (final report) are used to indicate the different steps of a CWA project and occur indifferent calendar years. A CWA project may have completed scoping and study design butbe delayed of off-track for implementation or completion.
- Table 2 shows the non-CMER project milestones. These milestones are implemented outsideof the Cooperative Monitoring, Evaluation, and Research (CMER) program and are largely within the control of the Forest Practices Operations Section of the Department of Natural Resources (DNR) or the Timber Fish and Wildlife Policy Committee (Policy).

Please contact me if you have any questions or concerns (360) 890-5882.

Enclosure

Table 14. Summary CMER Research Milestones and their current status.

Year	Description of Milestone	Status as of January 2021
2009	Complete: Hardwood Conversion – Temperature Case Study (Completed as data report)	**Completed** June 2010
2009	Study Design: Wetland Mitigation Effectiveness	**Completed** October 2010
2010	Study Design: Type N Experimental in Incompetent Lithology	**Completed** August 2011
2010	Complete: Mass Wasting Prescription-Scale Monitoring	**Completed** June 2012
2010	Scope: Mass Wasting Landscape-Scale Effectiveness	**Milestone Eliminated**
2010	Scope: Eastside Type N Effectiveness	**Completed** November 2013
2011	Complete: Solar Radiation/Effective Shade	**Completed** June 2012
2011	Complete: Bull Trout Overlay Temperature	**Completed** May 2014
2011	Implement: Type N Experimental in Incompetent Lithology	**Completed** October 2017
2011	Study Design: Mass Wasting Landscape-Scale Effectiveness	**Milestone Eliminated**
2012	Complete: Buffer Integrity-Shade Effectiveness	**Completed** November 2018
2012	Literature Synthesis: Forested Wetlands Literature Synthesis	**Completed** January 2015
2012	Scoping: Examine the effectiveness of the RILs in representing slopes at risk of mass wasting.	**Completed** April 2017
2012	Study Design: Eastside Type N Effectiveness	**Completed**

Year	Description of Milestone	Status as of January 2021
		March 2018
2013	Scoping: Forested Wetlands Effectiveness Study	**Completed** December 2016
2013	Wetlands Program Research Strategy	**Completed** January 2015
2013	Scope: Road Prescription-Scale Effectiveness Monitoring	**Completed** March 2016
2013	Study Design: Examine the effectiveness of the RILs in representing slopes at risk of mass wasting.	**Underway** Study is being designed and implementedin five projects with the first project sent to ISPR 2018, project 2 completed ISPR in2020.
2013	Implement: Eastside Type N Effectiveness	**Underway** Study is in implementation with harvestsplanned for summer/fall 2021. Implementation through 2027. Studyshould be complete by 2028.
2014	Complete: Type N Experimental in Basalt Lithology	**Completed** August 2017
2014	Study Design: Road Prescription-Scale Effectiveness Monitoring	**Underway February 2017** Unexpected permit delayed the start ofstudy to Spring 2019. Additional issueswere encountered with monitoring equipment. Replacement/repairs have pushed the projected completion estimated to 2029.
2014	Scope: Type F Experimental Buffer Treatment	**Scoping Completed** December 2015 Study was originally expected to proceedto implementation without a pilot study phase. It was later determined that a

Year	Description of Milestone	Status as of January 2021
		pilot study was needed. Since, a pilot study has been completed. Scoping for the full study has been completed. Completion of study scheduled for 2028.
2014	Implementation: Examine the effectiveness of the RILs in representing slopes at risk of mass wasting	**Earlier Stage Underway** Complete project 2 with final report in 2021. Complete work projects 3 & 4 withfinal reports in 2025. Complete project 5in 2026 with final report in 2027.
2014	Study Design: Forested Wetlands Effectiveness Study	**Complete** Study design approved by CMER December 2019 and presented to Policyin August 2020. Implementation expected to start spring 2022.
2015	Complete: First Cycle of Extensive Temperature Monitoring	**Completed** April 2019.
2015	Scope: Watershed Scale Assess. of Cumulative Effects	**Off Track** Project intended to follow other effectiveness monitoring studies which are behind schedule. Funding to begin in2029.
2015	Scope: Amphibians in Intermittent Streams (Phase III - renamed: Water Temperature and Amphibian Use in Type Np Waters with Discontinuous Surface Flow Project)	**Off Track** Project is being re-scoped, expected in2021.
2017	Study design: Watershed Scale Assess. of Cumulative Effects	**Off Track** Discussed above for 2015 scoping. Studydesign expected 2029.
2017	Study Design: Amphibians in Intermittent Streams (Phase III)	**Off Track** Scoping scheduled for 2021. Study designexpected in 2028.

Year	Description of Milestone	Status as of January 2021
2018	Complete: Roads Sub-basin Effectiveness	**Not Progressing** Project to be re-scoped in 2029 withcompletion in 2032.
2018	Implement: Watershed Scale Assess. of Cumulative Effects	**Off Track** Discussed above for 2015 scoping. Implementation scheduled to start 2030.
2018	Complete: Type N Experimental in Incompetent Lithology	**On Track** Report is currently in ISPR with an expected completion summer 2021.
2019	Complete: Eastside Type N Effectiveness	**Earlier Stage Underway** Discussed for 2013 implementation. Projected completion in 2028.

Table 15. Summary Non-CMER Project Milestones and their current status.

Year	Summarized Description of Milestone	Status as of January 20211
2009	July 2009: CMER budget and work plan will reflect CWA priorities.	**Completed** October 2010
2009	September 2009: Identify a strategy to secure stable, adequate, long-term funding for the AMP.	**Completed** October 2010 AMP funding was believed to be securedthrough the FFSA but came in under expectations for the 2019/21 biennium and additional cuts due to expected revenue shortfalls.
2009	October 2009: Complete Charter for the Compliance Monitoring Stakeholder Guidance Committee.	**Completed** December 2009

Year	Summarized Description of Milestone	Status as of January 20211
2009	December 2009: Initiate a process for flagging CMER projects that are having trouble with their design or implementation.	**Completed** November 2010 Process not being used in Policy or CMER.
2009	December 2009: Compliance Monitoring Program to develop plans and timelines for assessing compliance with rule elements such as water typing, shade, wetlands, haul roads and channel migration zones.	**Completed** March 2010
2009	December 2009: Evaluate the existing process for resolving field disputes and identify improvements that can be made within existing statutory authorities and review times.	**Completed** November 2010
2009	December 2009: Complete training sessions on the AMP protocols and standards for CMER, and Policy and offer to provide this training to the Board. Identify and implement changes to improve performance or clarity at the soonest practical time.	**Completed** May 2016
2010	January 2010: Ensure opportunities during regional RMAP annual reviews to obtain input from Ecology, WDFW, and tribes on road work priorities.	**Completed** September 2011
2010	February 2010: Develop a prioritization strategy for water type modification review.	**Completed** March 2013
2010	March 2010: Establish online guidance that clarifies existing policies and procedures pertaining to water typing.	**Completed** March 2013
2010	June 2010: Review existing procedures and recommended any improvements needed to effectively track compliance at the individual landowner level.	**Completed** November 2010
2010	June 2010: Establish a framework for certification and refresher courses for all participants responsible for regulatory or CMP assessments.	**Completed** September 2013

Year	Summarized Description of Milestone	Status as of January 20211
2010	July 2010: Assess primary issues associated with riparian noncompliance (using the CMP data) and formulate a program of training, guidance, and enforcement believed capable of substantially increasing the compliance rate.	**Completed** August 2012
2010	July 2010: Ecology in Partnership with DNR and in Consultation with the SFL advisory committee will develop a plan for evaluating the risk posed by SFL roads for the delivery of sediment to waters of the state.	**Completed** December 2018
2010	July 2010: Develop a strategy to examine the effectiveness of the Type N rules in protecting water quality at the soonest possible time that includes: a) Rank and fund Type N studies as highest priorities for research, b) Resolve issue with identifying the uppermost point of perennial flow by July 2012, and c) Complete a comprehensive literature review examining effect of buffering headwater streams by September 2012.	**Not Progressing** Part 'b' to be addressed after water typing system rule and Board Manualwork is completed.
2010	October 2010: Conduct an initial assessment of trends in compliance and enforcement actions taken at the individual landowner level.	**Completed** November 2010
2010	October 2010: Design a sampling plan to gather baseline information sufficient to reasonably assess the success of alternate plan process.	**Completed** December 2014
2010	December 2010: Initiate process of obtaining an independent review of the Adaptive Management Program.	**Completed** Draft State Auditor Office report presented to the Board February 2021
2011	December 2011: Complete an evaluation of the relative success of the water type change review strategy.	**Completed** March 2013
2011	December 2011: Provide more complete summary information on progress of industrial landowner RMAPs.	**Completed** September 2011

Year	Summarized Description of Milestone	Status as of January 20211
2012	October 2012: Reassess if the procedures being used to track enforcement actions at the individual land owner level provides sufficient information to potentially remove assurances or otherwise take corrective action.	**Completed** June 2012
2012	Initiate a program to assess compliance with the Unstable Slopes rules.	**Completed** October 2017
2013	November 2013: Prepare a summary report that assesses the progress of SFLs in bringing their roads into compliance with road best management practices, and any general risk to water quality posed by relying on the checklist RMAP process for SFLs.	**Off Track** State, Tribal, and Small Landowner caucus staff cooperatively developed a plan to conduct online and field surveysto inform the condition of SFL roads. Implementation began in 2019. Due to the Covid 19 Pandemic the field survey isabout 50% complete. Completion expected in 2021.

Status terminology:

"Completed" - milestone has been satisfied (includes those both on schedule and late).**"On Track"**- work is occurring that appears likely to satisfy milestone on schedule.
"Underway" - work towards milestone is actively proceeding, but likely off schedule.

"Earlier Stage Underway" – project initiated, but is at an earlier stage (off schedule) then the listed milestone.

"Not Progressing" - no work has begun, or work initiated has effectively stopped.

"Off Track" -1) No work has begun and inadequate time remains, 2) key stakeholders are not interested incompleting the milestone, or 3) attempt at solution was inadequate and no further effort atdeveloping an acceptable solution is planned.

Appendix B. Priority Watersheds for 2023

SWRO Priority Watersheds

SWRO spans WRIAs 10-29, spread throughout twelve counties. Nonpoint staff frequently coordinate with local partners, including municipal and county government agencies, interagency workgroups, Pollution Identification and Collection (PIC) groups, local Tribes, conservation districts, and local watershed groups. Information is shared with our partners through workgroup meetings, monthly conservation district (CD) board meetings, and distribution of our SW Region's monthly newsletter. This newsletter highlights recent nonpoint activities, areas of growing concern, new research, environmental complaints, and funding opportunities.

Through attendance at monthly conservation district board meetings, nonpoint staff are able to further develop cooperative relationships with CDs. Because CD's are the trusted local technical assistance resource for landowners needing to make improvements, these relationships consistently prove to be invaluable for implementing water quality improvement BMPs.

Due to the high costs of BMP implementation for landowners, we work to support grant applications from CDs and other local partners. Nonpoint staff work with grants staff to provide grant information, application assistance, and feedback prior to the grant submission deadline.

Through technical assistance letters, outreach mailers, and in-person site visits, nonpoint staff provide landowners with resource-specific water quality education materials (e.g., impacts of livestock/land-use practices on water quality, agricultural BMPs for water quality protection, and onsite-septic system maintenance, etc.). We work with landowners to contextualize the impacts of local actions on water quality, explain water quality data, and provide referrals to local partners for financial assistance through cost-share programs and grants.

Each staff member conducts watershed evaluations based on pollution concerns, resource concerns (e.g., shellfish), complaints, and continued monitoring needs. Water quality samples are taken to help identify areas for further investigation and to monitor potential improvements. These evaluations help to prioritize efforts and focus resources throughout the region.

Staff respond to complaints submitted in Ecology's Environmental Report Tracking System (ERTS) and coordinate with local agencies to resolve the issue. Identified nonpoint source pollution sites of concern are recorded in our Nonpoint Inspection (NPI) database and we follow the Nonpoint Desk Book Manual and compliance flow chart timelines.

For focal watersheds, priority actions for 2023 are highlighted below.

Priority Watershed Name: Boise, Pussyfoot, and Second Creeks-Enumclaw Plateau

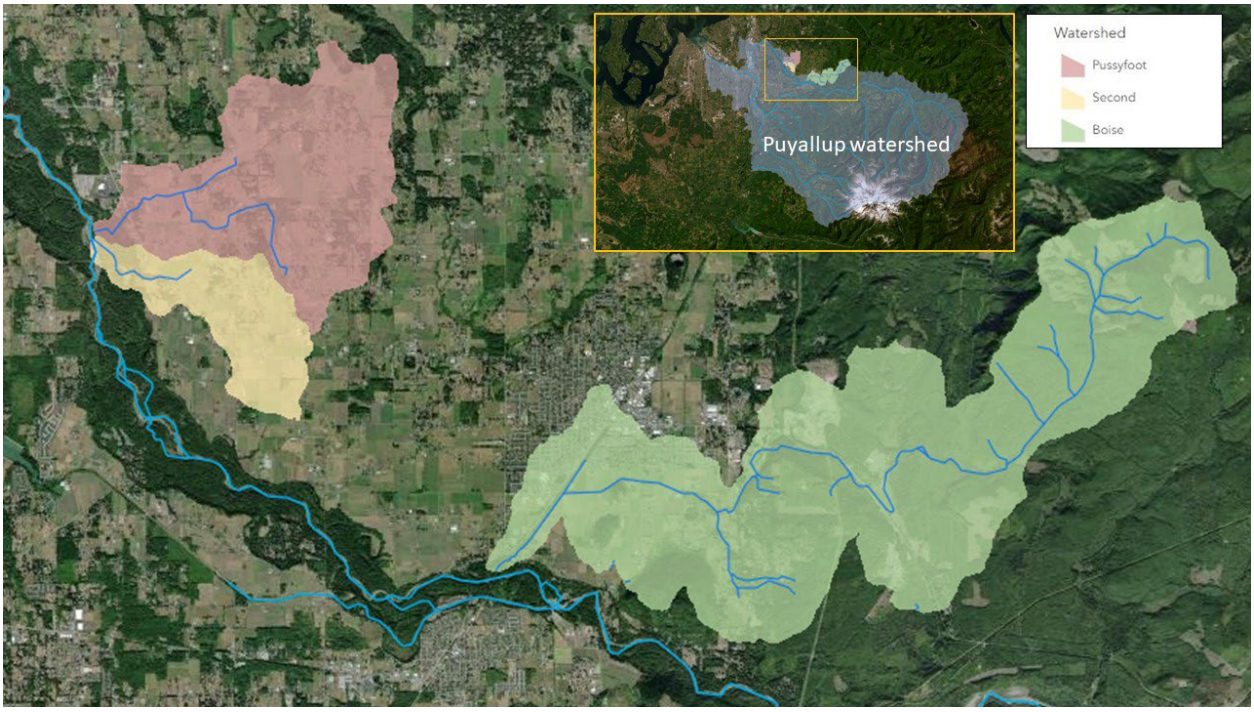

Figure 31. Map showing White River TMDL priority watersheds - Boise, Pussyfoot and Second Creeks.

Implementing: Puyallup Watershed Fecal Coliform TMDL in Boise, Pussyfoot, and Second Creeks

Summary/Context Info:

Since 2014, Ecology nonpoint staff have been collaborating with other state and local partners to monitor, identify, and address pollution issues within the Enumclaw MS4 and the surrounding areas. Ecology identified three tributaries within the Enumclaw plateau as priority watersheds: Boise Creek, Pussyfoot Creek, and Second Creek. Nonpoint pollution inputs within these watersheds significantly increase during the wet season due to the poor drainage throughout the plateau. External partners include the Muckleshoot Tribe, U.S. Natural Resources Conservation Service, Washington State Department of Agriculture, King County Livestock, King County Public Health, King County Department of Water and Land Resources, King County Public Health, King Conservation District, City of Enumclaw, Enumclaw Community Association.

Priority Actions Projected for 2023:

Education and Outreach

Ongoing:

- **Participate in Enumclaw's Farmers Market:** Ecology staff will run a booth at the local Enumclaw Farmers Market to educate the community about water quality in their area.
- **Distribute outreach materials at the King County Fair:** Ecology staff will work to interact with the community and distribute educational materials to livestock owners at the King County Fair in July.
- **Provide partners with input and educational materials:** Work with our partners involved in the Peer-to-Peer program to review and develop educational material. This group is drafting a survey to distribute to Enumclaw area landowners.

Projected:

- **Create Enumclaw Storymap:** To complement other education and outreach by our partners, Ecology will create a Storymap to highlight water quality issues in the area and connect landowners to resources. It is projected that a rough draft will be completed in 2023.
- **Sites of concern mailer:** In 2022, staff created a mailer to inform the community about water quality issues on the Enumclaw Plateau. This mailer highlights how landowners can help improve their local waterways and outlines available resources. This will be sent to 75 identified sites of concern.

Financial Assistance

Ongoing:

- **Provide partners with front-end feedback on grant proposals:** In an effort to encourage and assist our partners to draft successful grant proposals, we will coordinate with grants staff to provide grantees with the option to submit a notice of intent and receive feedback prior to the fall submittal deadline.
- **Provide information to landowners**: We will continue to provide information about technical and financial assistance available to landowners as they move forward with BMP implementation.

Partner Coordination

Ongoing:

- **Continue to hold sites of concern prioritization meetings with state and local partners and stakeholders:** Coordinate and facilitate meetings with partners directly involved with BMP implementation on the plateau to discuss and receive feedback about future and ongoing enforcement activities.

- **Hold quarterly meetings to facilitate sharing of water quality monitoring data:** Continue to hold quarterly meetings with tribal, federal, state, and local water quality monitoring staff to share data, facilitating the coordination and prioritization of field efforts.
- **Continue to participate in monthly King County Peer-to-Peer engagement meetings:** Provide feedback and direction to the peer-to-peer engagement group that is working to identify homeowners and entities to serve as peer educators on the plateau, distribute surveys to understand successful engagement strategies, and create a plan for plateau-wide education and outreach.

Projected:

- **Enumclaw Plateau survey:** The King County Peer-to-Peer group has been working to create a survey for distribution to landowners in 2023. Ecology has been instrumental in the design and will continue to play a major role in distribution.

Pollution Identification/Watershed Evaluation:

Ongoing:

- **Continue to identify sites of concern:** Continue to work in the field and within the community to identify additional sites of concern that have not yet been prioritized.
- **Utilize monitoring data to refine nonpoint efforts:** Continue work to collect and evaluate available water quality monitoring data and take opportunistic and bracketed samples when appropriate.
- **Update Nonpoint Inspection (NPI) database:** Systematically identify and document sites of concern in the NPI database.

Projected:

- **Boise Creek drainage prioritization:** Staff will collect water samples in various drainages that lead to Boise Creek to prioritize outreach and compliance efforts. A minimum of three drainages will be sampled at least three times.

Compliance/Technical Assistance Activities

Ongoing:

- **Compliance follow-up:** Follow-up and continue technical assistance efforts with landowners who have received letters from Ecology.
- **Send technical assistance letters to properties in focus area:** Continue to systematically send out technical assistance letters to “high risk” properties to address pollution concerns.
- **Evaluate and respond to incoming ERTS complaints:** Continue to respond directly or coordinate with WSDA, King County, and City of Enumclaw staff to address livestock or OSS related pollution sources.

Projected:

- **Pussyfoot Creek focus area:** Staff plan to actively engage with an additional three landowners in the upper reaches of Pussyfoot Creek in 2023.

Monitoring Activities

Ongoing:

- **Continue Monitoring in Boise, Pussyfoot, and Second Creek Drainages:** SWRO staff will continue monitoring efforts in the Boise, Pussyfoot, and Second Creek drainages and continue to make the information publicly available for landowners via Whatcom CD's Surface Water Monitoring Webmap.

Projected:

- **Assess drainages to Boise Creek:** Staff will collect samples from 3 drainages to assess the impacts to Boise Creek and use the data to contact landowners.

Priority Watershed Name: East Fork Lewis River

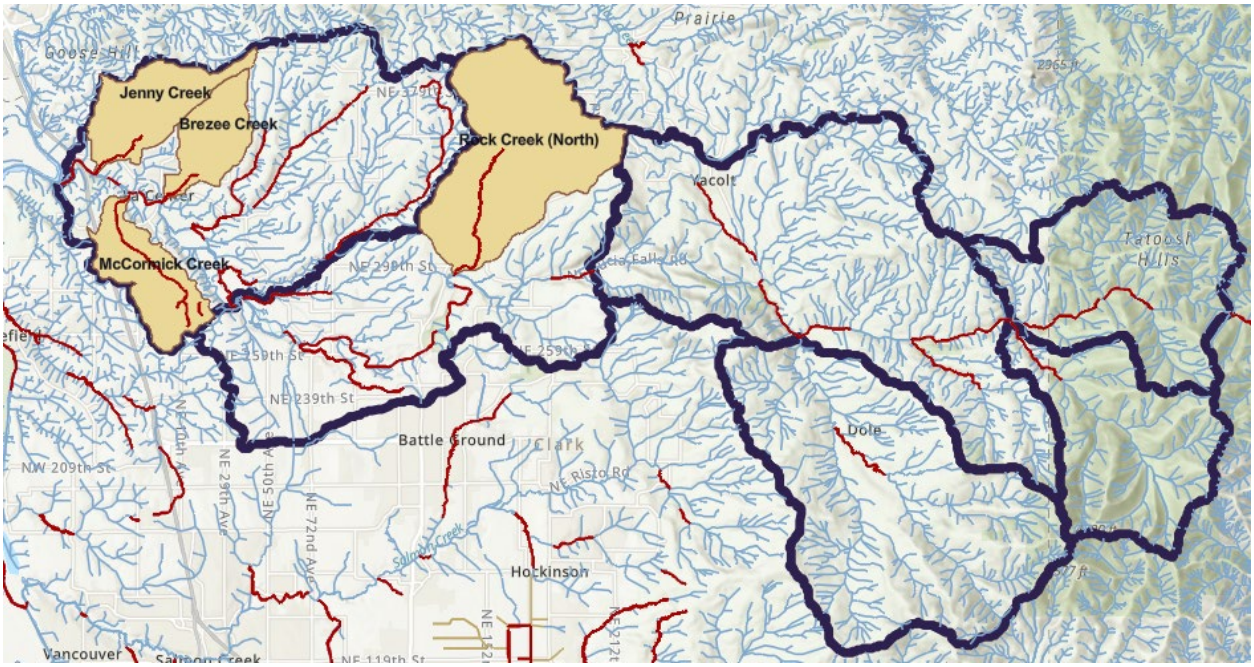

Figure 32. Map of the East Fork Lewis River and surrounding areas.

Implementing: East Fork River Alternative Restoration Plan[32]

Summary/Context Info:

The East Fork Lewis River (EFLR) Alternative Restoration Plan was approved by EPA in 2021 to address temperature and bacteria impairments. The EFLR watershed is home to both the fastest growing city in Washington State, and five high priority populations of Endangered Species Act (ESA) listed salmon and steelhead. The watershed has seen a 47 percent increase in human population since 2000, and provides recreation, timber, agriculture, and water resources for this rapidly growing region of the State. At the same time, the watershed is key to the recovery of ESA-listed salmon and steelhead that rely on the mainstem and tributaries for critical spawning and rearing habitat. The Poop Smart Clark Pollution Identification and Correction (PIC) group is working collaboratively to identify bacteria sources and to direct resources to problem areas. Stream and habitat restoration projects have been initiated by local non-profit watershed groups including the reclamation project of nine abandoned pit mines along the East Fork Lewis River. External partners include Clark County Conservation District, Clark Public Utilities, Washington State University Extension, Clark County Public Health, Clark County Clean Water, The Watershed Alliance, and the Lower Columbia Estuary Partnership.

[32] https://apps.ecology.wa.gov/publications/documents/2110051.pdf

Priority Actions Projected for 2023:

Education and Outreach

Ongoing:

- **Public Events:** Ecology staff will continue to coordinate with WSU Extension, Clark County Conservation District, Clark County Public Health, and Clark Public Utilities on water quality workshops and participate in public outreach events, when appropriate.
- **Landowners:** We will continue to provide water quality related educational materials to landowners within the watershed with an estimated 15 site visits per year by either Ecology staff or referred to the Conservation District's Working Lands Program Manager.

Financial Assistance

Ongoing:

- **Funding:** In 2022, Ecology funded the initiation of Poop Smart Clark Pollution Identification and Correction (PIC) program in four selected sub-watersheds addressing livestock and onsite nonpoint pollution concerns. Ecology award = $496,977.
- **Information sharing**: Ecology staff continue to provide landowners with financial assistance opportunities for BMP implementation on their properties and assist local partners with grant funding opportunities.

Partner Coordination

Ongoing:

- **Conservation District:** SWRO staff will continue to attend monthly Clark Conservation District Board Meetings and coordinate with CD staff on addressing pollution concerns.
- **PIC:** SWRO staff will continue to participate in monthly PIC "Poop Smart" meetings and provide updates on compliance activities.

Projected:

- **IDDE Project:** Staff will encourage the City of La Center to pursue funding through the Stormwater Financial Assistance Program to help implement an illicit discharge detection and elimination project to address sources of bacterial pollution entering their stormwater system.

Pollution Identification/Watershed Evaluating

Ongoing:

- **Watershed Evaluation:** SWRO staff will continue to conduct site visits to assess potential pollution sources, provide technical assistance to residents, and refer landowners to Clark Conservation District when appropriate.

- **Source ID:** Staff will continue to work with the City of La Center in order to identify and correct sources of bacterial pollution impacting their stormwater system.

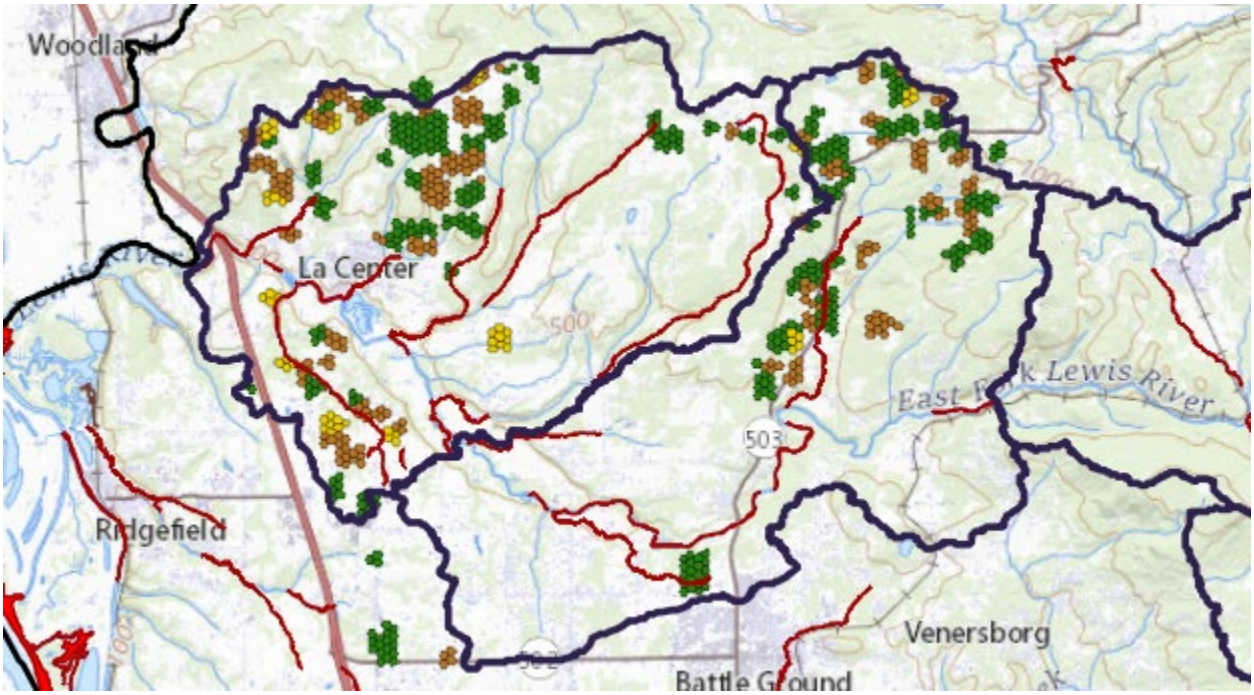

Figure 33. East Fork Lewis River ruminant and horse presence area map: green =ruminant, brown =horses, yellow =both. Graphic provided by Poop Smart Clark Program.

Compliance Activities

Ongoing:

- **Complaint Response:** Staff will continue to verify and respond to nonpoint concerns submitted through Ecology's reporting system (ERTS). There were eight investigations into environmental violations, these included concerns over manure piles, livestock with access to surface water and the accumulation of junk vehicles on private property; these sites of concern will continue to be monitored for compliance follow through.

Monitoring Activities

Ongoing:

- **Investigatory collection:** Staff will take opportunistic samples when responding to complaints or referrals on a per-case basis.

Priority Watershed Name: Greater Key Peninsula

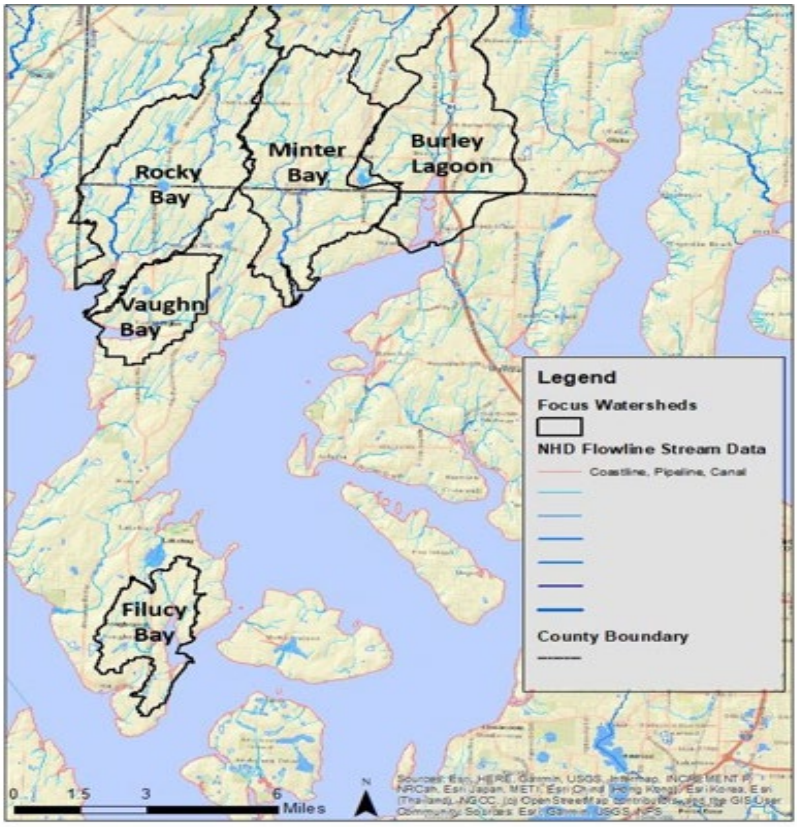

Figure 34. Map of five sub-watersheds of the Key Peninsula.

Implementing: Puget Sound Partnership Action Agenda

Nonpoint work within these five sub-watersheds is funded by a National Estuary Program (NEP) grant that is overseen and administered through the Washington Department of Health. Nonpoint staff work with local partners, Tacoma-Pierce County Health Department, Pierce County Planning and Public Works Department, Pierce Conservation District, Pierce County Code Enforcement, Kitsap Public Health, as well as landowners to reduce nonpoint sources of bacterial pollution originating from agricultural activities.

Summary/Context Info:

The entire Key Peninsula is 16 miles long and extends southward from the Kitsap Peninsula into the South Puget Sound, flanked by Case and Carr Inlets. The Greater Key Peninsula project area includes Pierce County drainages from Rocky Bay, Vaughn Bay, Filucy Bay, Burley Lagoon, and Minter Bay. These shallow, tidally influenced bays are known for low flushing rates, abundant shellfish, and continual shellfish closures due to elevated levels of fecal bacteria. Growing areas in these five sub-watersheds have been closed periodically for decades and the local PIC program has been coordinating responses.

Land use patterns on the Key Peninsula range from small-scale agriculture and forest lands to residential and vacation homes, presenting a variety of sources of nonpoint pollution. Nonpoint staff work with local partners to identify the nature of pollution sources (e.g., livestock or on-site septic systems) and respond where our partners' jurisdiction does not extend. These often include addressing agricultural sources. Staff also function as a regulatory backstop when local partners' authority is unable to bring about changes that adequately protect water quality.

Priority Actions Projected for 2023:

Education and Outreach

Ongoing:

- **Coordination with local partners to draft mailer for Vaughn Bay:** Due to the continued failure of WA DOH Marine Water Quality monitoring station 650 and subsequent downgrading of 44.5 acres in Vaughn Bay, Ecology nonpoint staff and Tacoma-Pierce County Health Department staff are collaborating to craft an outreach letter to engage landowners on the south side of the Bay. This letter will offer resources and financial assistance opportunities in an attempt to correct sources of the elevated levels detected along the shoreline and in DOH samples.

Projected:

- **Joint mailer distribution:** Staff will systematically distribute mailers throughout a sub-watershed of Vaughn Bay. 50 mailers will be distributed to parcels along the southern shoreline of Vaughn Bay.
- **Mailer response:** In an effort to monitor mailer response, staff will track and respond to phone calls, e-mails, and requests for site visits from landowners who receive the joint mailer. Staff will provide additional educational materials to residents, landowners, and operators and refer them to appropriate partner agencies when needed.

Financial Assistance

Ongoing:

- **Information sharing**: Staff will provide information to:
    - Landowners regarding financial assistance opportunities through local partners (i.e., conservation district cost-share programs).
    - Local partners regarding grant funding opportunities.

Partner Coordination

Ongoing:

- **Sites of concern response:** Ecology will continue to coordinate with local partners to respond to elevated risks to water quality on parcels that have been identified as sites of concern.

- **Referrals:** Ecology staff have successfully referred 5 sites of concern involving livestock accessing surface water and lack of manure management practices that are protective of water quality to local CD staff. CD staff have reached out directly to landowners or have been contacted after landowners received a technical assistance letter from Ecology.

Projected:

- **Partner meetings:** Staff will participate in 4 quarterly PIC and water quality/shellfish meetings, which focus on the five watersheds, to provide updates on compliance activities.

Pollution Identification/Watershed Evaluating

Projected:

- **Watershed evaluation:** In an effort to identify nonpoint sources of pollution, watershed assessments will be conducted, primarily during the wet seasons. Additional windshield surveys will also take place if monitoring data show areas of exceedance. We will complete at least one assessment by December of 2023.

Compliance Activities

Completed:

- **Technical assistance and compliance follow-through:** Staff issued 7 technical assistance letters, delivered 1 door hanger, and conducted 8 evaluations of sites of concern from the public rights-of-way. Staff resolved 10 priority sites of concern by observing livestock management practices to protect water quality had been put in place.

Ongoing:

- **Compliance follow-up:** Staff are working with local partners to follow up on 9 sites of concern that were identified and addressed in 2022.
- **Responding to responsible parties:** Ecology staff will utilize the Nonpoint Desk Book Manual and compliance flowchart timelines to respond to sites identified during watershed assessments or via reported concerns. If local partners are not currently working with the responsible party, staff will respond by phone, email, or letter within two weeks after deeming the site a priority of concern to protect water quality.

Monitoring Activities

Ongoing:

- **Source Identification**: Staff will sample higher in the watershed when partner ambient sites show exceedances downstream.
- **Investigatory Collection**: Staff will take opportunistic samples when responding to complaints or referrals on a case-by-case basis.

Priority Watershed Name: Eld Inlet, Henderson Inlet, & Nisqually Reach

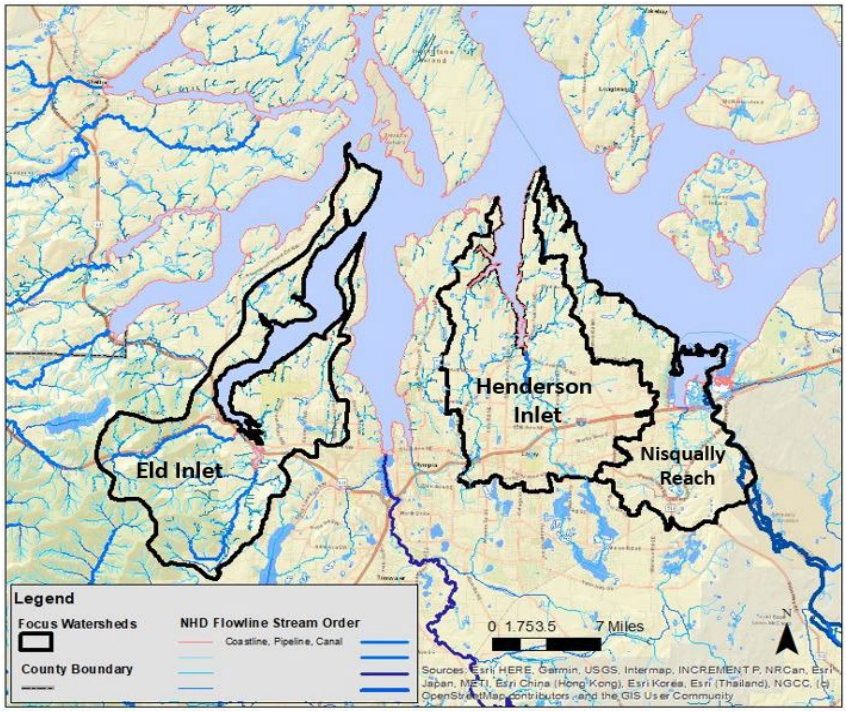

Figure 35. Map showing locations of all three priority watersheds in South Puget Sound.

Implementing: Puget Sound Partnership Action Agenda

Nonpoint work within these three sub-watersheds is funded by a National Estuary Program (NEP) grant that is overseen and administered through the Washington Department of Health. Nonpoint staff work with local partners such as Thurston County Public Health and Social Services, Thurston Conservation District, Thurston County Code Enforcement, Henderson Inlet/Nisqually Reach Shellfish Protection District, as well as landowners to reduce nonpoint sources of bacteria pollution originating from domestic and agricultural activities.

Summary/Context Info:

The Eld and Henderson Inlets and the Nisqually Reach drainage areas are located within the South Puget Sound, known for low flushing rates and abundant shellfish habitat. These watersheds have shellfish growing areas identified by DOH as at risk of closure due to elevated marine fecal coliform levels. These watersheds also support salmon habitat in rural, suburban, and urban areas and the majority of land use is residential with a low density of small agricultural sites. SWRO staff have been coordinating nonpoint efforts in these watersheds in concert with local partners' outreach and PIC work.

Priority Actions Projected for 2023:

Education and Outreach

Ongoing:

- **Create a horse manure informational flyer:** Staff are working with partners to create a comprehensive handout for resources and locations for horse manure disposal. This will allow staff to connect hobby farms with services and bring a full understanding of risks and solutions to their manure management practices.
- **Create and distribute joint mailer:** Staff will distribute mailers aimed towards educating residents in each focus watershed on what practices contribute to bacteria pollution and how to prevent bacteria from entering surface water. These will be distributed to the Nisqually Reach and Eld Inlet sub-watershed residents and landowners. These mailers will reinforce local partners' PIC work within the area.
- **Mailer response:** Staff will track and respond to phone calls, e-mails, and requests for site visits from landowners who received the mailer to provide educational materials and refer to appropriate partner agencies as appropriate.

Financial Assistance

Ongoing:

- **Information Sharing**: Staff will provide information to:
    - Landowners regarding financial assistance opportunities through local partners (i.e., conservation district cost-share programs).
    - Local partners regarding grant funding opportunities.

Partner Coordination

Ongoing:

- **Sites of concern response:** Staff will continue to coordinate with partners to facilitate working with parcels that have been identified as potential pollution sources.
- **Informal meetings:** SWRO nonpoint staff will continue to meet with local staff to discuss sources of nonpoint pollution and watershed assessments.
- **Partner Meetings:** Staff will continue to participate in and facilitate quarterly PIC meetings, yearly Shellfish Protection District meetings, and monthly Thurston Conservation District meetings to provide updates on compliance activities.

Pollution Identification/Watershed Evaluating

Ongoing:

- **Complaint/Referral response:** Staff will continue to verify and respond to nonpoint concerns submitted through Ecology's complaint system (ERTS).

Projected:

- **Watershed evaluation:** Watershed assessments will be conducted primarily in the wet season. Windshield surveys will also take place if monitoring data show areas exceeding water quality standards and threatening shellfish growing areas. At least one watershed assessment will be completed by December 2023.

Compliance Activities

Ongoing:

- **Compliance follow-up:** One site of concern was identified and addressed through the ERTS system, partner referrals, and a joint site visit in 2022 that involved sediment inputs to a salmon-bearing stream. Staff are working with local partners to follow up and connect landowners with available resources.
- **Responding to responsible parties:** Ecology staff will utilize the Nonpoint Desk Book Manual and compliance flowchart timelines to respond to sites identified during watershed assessments or via reported concerns. If local partners are not currently working with the responsible party, staff will respond by phone, email, or letter within two weeks after deeming the site a priority of concern to protect water quality.

Monitoring Activities

Ongoing:

- **Source identification**: Staff will sample higher in the watershed when partner ambient sites show exceedances downstream.
- **Investigatory collection**: Staff will take opportunistic samples when responding to complaints or referrals on a per-case basis.
- **Partner PIC monitoring**: Staff utilize data collected by the local health department of the WA State Department of Health to respond to elevated bacteria detected in focus watersheds.

Priority Watershed Name: Oakland Bay & Johns Creek

Figure 36.Picture of Oakland Bay and Johns Bay

Implementing: Puget Sound Partnership Action Agenda

Nonpoint work within these sub-watersheds is funded by a National Estuary Program (NEP) grant that is overseen and administered through the Washington Department of Health. Nonpoint staff work with local partners, Mason County Environmental Health Department, Mason Code Enforcement, Mason Conservation District, Squaxin Island Tribe, as well as landowners to reduce nonpoint sources of bacteria pollution originating from agricultural activities.

Summary/Context Info:

Oakland bay is a shallow, poorly flushed embayment connected to the South Puget Sound, with a history of poor water quality and an extremely productive shellfish industry. Because of its poorly flushed nature, shallow waters, and increasing population, Oakland Bay continues to experience declining water quality. Johns Creek enters Oakland Bay at its northwestern shore. Multiple water quality parameters in Johns Creek have impairments, including bacteria, temperature, and dissolved oxygen. Nonpoint staff have identified agricultural operations and residential onsite septic systems that are impacting the water of both Oakland Bay and Johns Creek.

Priority Actions Projected for 2023:

Education and Outreach

Ongoing:

- **Collaborate with partners to create educational outreach mailers:** Staff will continue to work with Mason County Environmental Health Department and other area partners to develop educational mailers with lists of available resources.
- **Mailer response:** Staff will track and respond to phone calls, e-mails, and requests for site visits from landowners who received the mailer. Staff will provide educational materials and refer landowners to the appropriate partner agency.

Financial Assistance

Ongoing:

- **Information sharing**: Staff will provide information to:
    - Landowners regarding financial assistance opportunities through local partners (i.e., conservation district cost share programs).
    - Local partners regarding grant funding opportunities.

Partner Coordination

Ongoing:

- **Sites of concern response:** Staff will continue to coordinate with partners to facilitate working with identified parcels with potential pollution sources.

Projected:

- **Partner meetings:** Staff will participate in quarterly Clean Water District meetings and provide updates on compliance activities.

Pollution Identification/Watershed Evaluating

Ongoing:

- **Complaint/Referral response:** SWRO staff continue to verify and respond to nonpoint concerns in the Oakland Bay/John's Creek area via partner referrals or submitted through Ecology's complaint system. Ecology staff continue to evaluate progress on existing sites of concern as site conditions and land management practices change over time.

Compliance/Technical Assistance Activities

Ongoing:

- **Responding to responsible parties:** Ecology staff will continue to utilize the Nonpoint Desk Book Manual and compliance flowchart timelines to respond to sites identified as sites of concerns through windshield assessments or reported from a third party. If local partners are not currently working with the responsible party, staff will respond by phone, email, or letter within two weeks after deeming the site a priority of concern to protect water quality.

Monitoring Activities

Ongoing:

- **Source identification**: Staff will sample higher in the watershed when partner ambient sites show exceedances downstream.
- **Investigatory collection**: Staff will take opportunistic samples when responding to complaints or referrals on a per-case basis.
- **Partner PIC monitoring:** Staff will continue to utilize data collected by the local health department or the WA State Department of Health to respond to elevated bacteria detected in assigned focus watersheds.

Priority Watershed Name: Skokomish Valley & Annas Bay

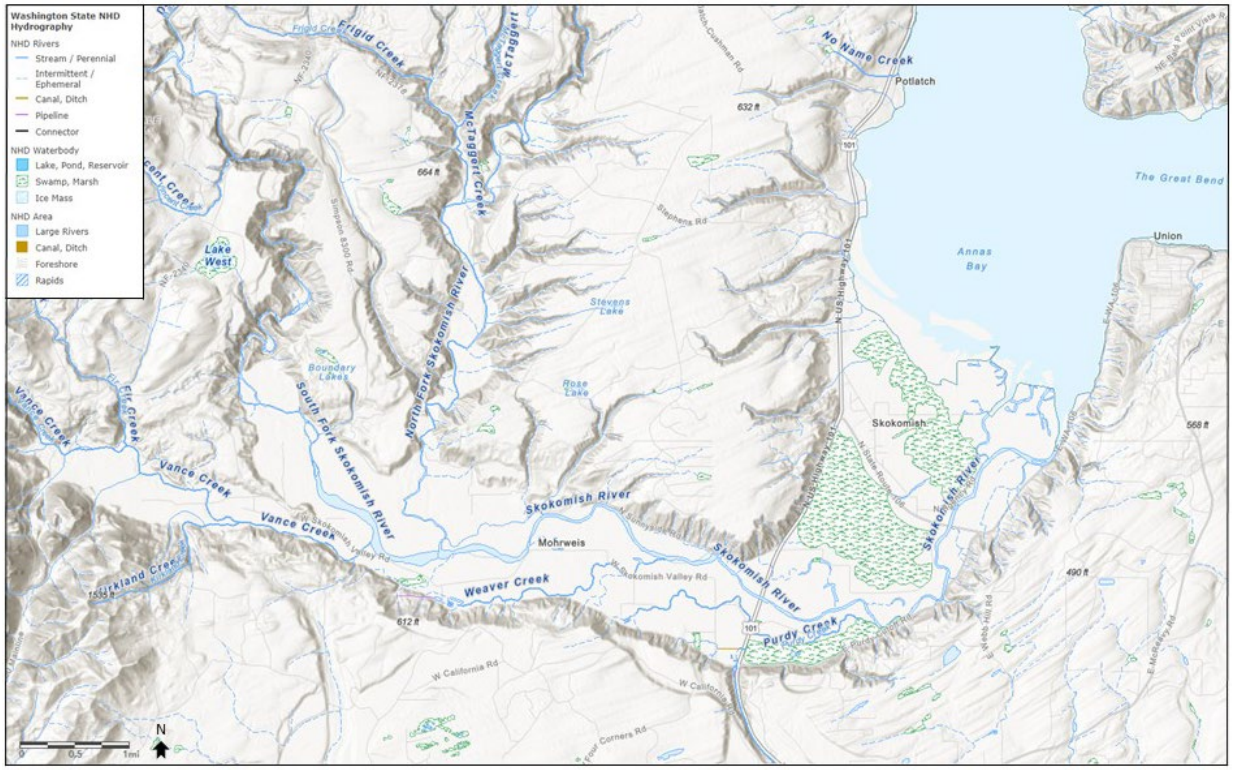

Figure 37. Map showing Skokomish River watershed and Annas Bay.

Implementing: Puget Sound Partnership Action Agenda

Nonpoint work within this watershed is funded by a National Estuary Program (NEP) grant that is overseen and administered through the Washington Department of Health. Nonpoint staff work with local partners, Mason County Environmental Health Department, Mason Code Enforcement, Mason Conservation District, Skokomish Tribe, as well as landowners to reduce nonpoint sources of bacteria pollution originating from agricultural activities. After responding to multiple ERTS and partner referrals within these watersheds/sub-watersheds, staff observed multiple parcels where livestock operations had the potential to contribute to bacteria pollution over recent years. Risk to shellfish growing areas downstream from bacteria pollution continues to increase, increasing the risk of growing area closures.

Summary/Context Info:

The Skokomish River and the Delta, known as Annas Bay, boasts hundreds of acres of tidal flats used for shellfish harvest and is home to numerous species of fish and wildlife including ESA-listed Coho and threatened stocks of Chinook. Flooding events in the Valley magnify the water quality impacts of livestock operations and Ecology is working to address the pollution inputs of this small community.

Priority Actions Projected for 2023:

Education and Outreach

Ongoing:

- **Collaborate with partners to coordinate messaging for educational/outreach mailers:** Staff will continue working with Mason County Environmental Health Department and other area partners to develop educational mailers to provide landowners with up-to-date information regarding available technical and financial resources.

Financial Assistance

Ongoing:

- **Information Sharing:** Staff will provide information to:
    - Landowners regarding financial assistance opportunities through local partners (i.e., conservation district cost-share programs).
    - Local partners regarding grant funding opportunities.

Partner Coordination

Ongoing:

- **Continue working to maintain relationships with Mason Conservation District (MCD):** Continue to facilitate staff-to-staff meetings to keep MCD abreast of our outreach and enforcement efforts and continue to attend MCD board meetings.
- **Attend quarterly PIC meetings:** Staff will continue to attend Mason Clean Water District and Hood Canal Pollution Identification and Correction meetings to coordinate response efforts to identified water quality concerns.

Projected:

- **Participate in quarterly Skokomish Watershed Action Team (SWAT) meetings:** Staff will participate in SWAT partner meetings to stay informed on area restoration projects and Federal/State/Local habitat and water quality issues within the Skokomish area.

Pollution Identification/Watershed Evaluation:

Ongoing:

- **Utilize monitoring data to continue nonpoint efforts:** Continue work to collect and evaluate available water quality monitoring data collected by local partners and take opportunistic and bracketed samples when appropriate.
- **Work to identify sites of concern:** Continue to conduct field observations and document properties where livestock have access to streams and riparian areas.

Compliance/Technical Assistance Activities

Ongoing:

- **Responding to responsible parties:** Ecology staff will continue to utilize the Nonpoint Desk Book Manual and compliance flowchart timelines to respond to sites identified as sites of concern through windshield assessments or reported from a third party. If local partners are not currently working with the responsible party, staff will respond by phone, email, or letter within two weeks after deeming the site a priority of concern to protect water quality.

Monitoring Activities

Ongoing:

- **Source identification:** Staff will sample higher in the watershed when partner's ambient sites show exceedances downstream.
- **Investigatory collection:** Staff will take opportunistic samples when responding to complaints or referrals on a per-case basis.
- **Partner PIC monitoring:** Staff will continue to utilize data collected by the local health department or the WA State Department of Health to respond to elevated bacteria detected in the Skokomish watershed.

Priority: Nisqually River & Ohop Creek

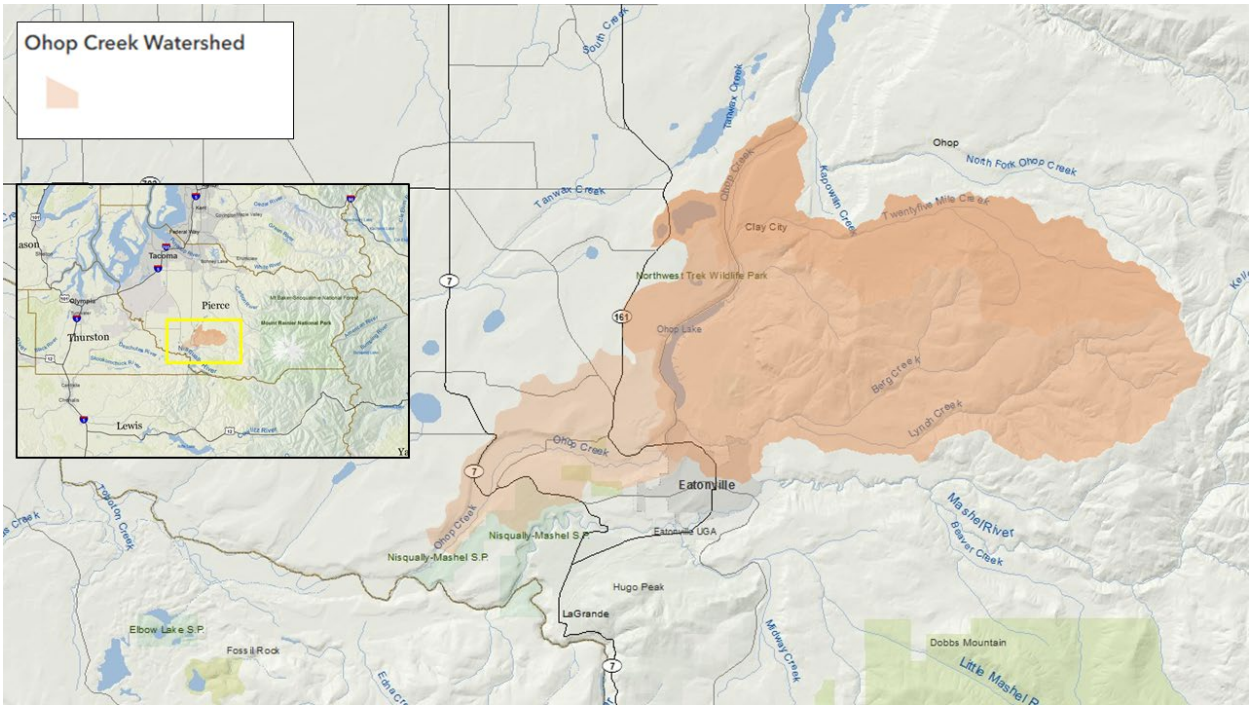

Figure 38. Nisqually and Ohop creek map

Implementing: Nisqually River watershed bacteria and dissolved oxygen TMDL

Summary/Context Info:

As one of the least degraded major watersheds in the Puget Sound, the Nisqually River and its tributaries continue to be critically important spawning and rearing habitat for ESA listed salmonid species. In 2005, the EPA approved a TMDL in the Nisqually River watershed and the Henderson Inlet basin. In this study, Ohop Creek was identified by Ecology to be a primary area of interest for fecal bacteria reduction. Partners: Nisqually Land Trust, Nisqually River Council, Nisqually Indian Tribe, Pierce Conservation District, and Pierce County Public Works.

Priority Actions Projected for 2023:

Education and Outreach

Projected:

- **Hand out informational material to landowners:** Ecology staff will hand out educational material and talk with landowners about water quality issues in the Ohop Watershed.

Financial Assistance

Projected:

- **Provide partners with front-end feedback on grant proposals:** In an effort to encourage and assist our partners to draft successful grant proposals, we will provide grantees with the option to submit a Notice of Intent to apply for grant funds, to receive feedback prior to the fall submittal deadline.
- **Information sharing**: Staff will provide information to landowners regarding financial assistance opportunities through local partners (i.e., conservation district cost share programs) and Ecology funding opportunities. Ecology staff will give a presentation to the Nisqually Habitat Workgroup on available Ecology funding opportunities.

Partner Coordination

Ongoing:

- **Continue to attend monthly partner meetings:** Ecology will attend Nisqually River Council, Pierce Conservation District, and Nisqually Habitat Workgroup meetings to provide guidance and support water cleanup efforts.
- **Addressing water quality concerns:** Continue to work with area partners to address ERTS complaints.
- **Enforcement updates:** Continue to communicate with partners about the status of landowner BMP implementation and enforcement actions.

Pollution Identification/Watershed Evaluation:

Ongoing:

- **Utilize monitoring data to continue to identify areas of concern:** Continue work to collect and evaluate available water quality monitoring data and take opportunistic and bracketed samples when appropriate.
- **Work to identify properties with livestock:** Continue to conduct field observations and document properties where livestock have access to streams and riparian areas.
- **Water quality sampling**: Continue to sample tributaries through the 2022-2023 and 2023-2024 wet seasons to assess upstream bacterial inputs.

Compliance/Technical Assistance Activities

Projected:

- **Provide technical assistance to area livestock owners:** Ecology will work to connect with area livestock owners to provide technical assistance.
- **Compliance follow-up:** Follow-up and continue technical assistance efforts with landowners that have received letters to address identified water pollution concerns.

- **Evaluate and respond to incoming ERTS complaints:** Respond directly or work with area partners to respond to livestock or OSS-related complaints.

Monitoring Activities

Ongoing:

- **Work with partners to identify water quality issues:** Continue to work with area partners to identify potential properties with water quality issues.

Priority Watershed Name: Lacamas Creek

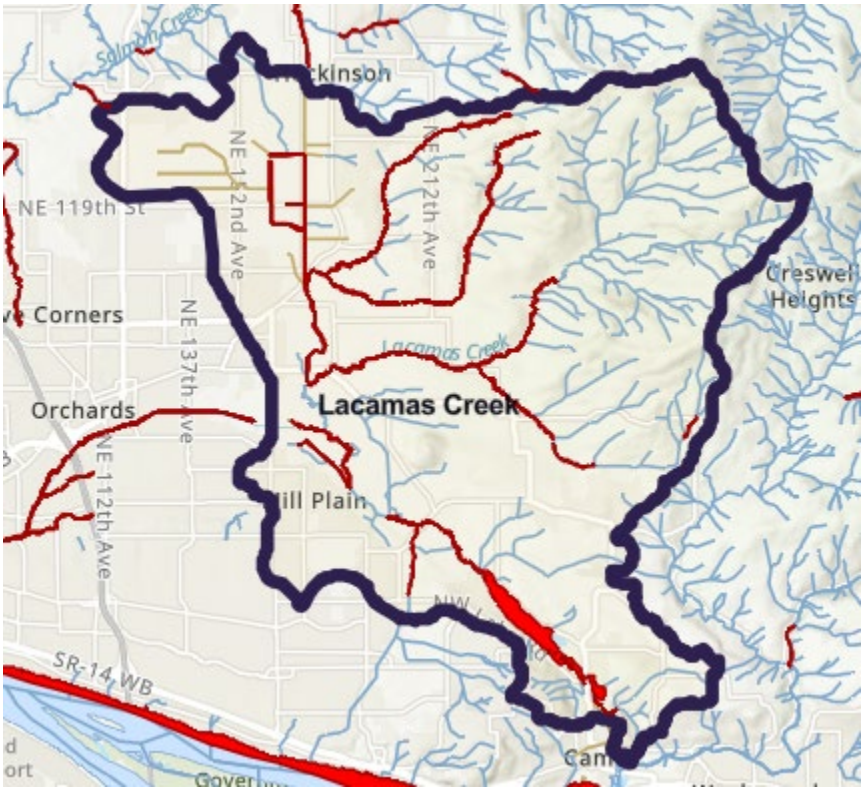

Figure 39. Map of the Lacamas Creek watershed and surrounding areas.

Summary/Context Info:

The Lacamas Creek watershed has a number of water quality impairments including temperature, bacteria, dissolved oxygen, and pH. Among the concerns that result from these upstream impairments are the persistence of algal blooms and invasive aquatic species in Lacamas Lake. Additional water quality samples were collected in the Lacamas watershed during the fall of 2021. Ecology will use this information to develop a source assessment report in order to identify critical areas for water quality improvement. Nonpoint staff will work with partners (Clark County, City of Camas, WSDA, Watershed Alliance, Clark CD, and NRCS) to develop outreach materials that describe water pollution issues in the watershed, and to assist with identifying properties in need of BMPs.

Priority Actions Projected for 2023:

Education and Outreach

Ongoing:

- **Partners:** Ecology staff will continue to facilitate and disseminate water quality data through partners within the Lacamas Creek Partnership for Clean Water. Supporting partners include Clark County Pollution Identification and Correction (PIC), City of Camas,

WA Department of Agriculture, USDA National Resource Conservation Service, Clark Conservation District, and the Watershed Alliance of Southwest Washington.

Projected:

- **Partner Outreach:** Nonpoint staff will work with Clark County PIC partners to develop outreach materials about water quality concerns for the watershed and assist with identifying properties in need of BMPs.

Pollution Identification/Watershed Evaluating

Ongoing:

- Assessment:
    - Continue to review water quality data to determine critical areas for nonpoint source pollution identification.
    - Work in the field to identify and prioritize sites of concern.

Projected:

- **Plan:** After an analysis of water quality data collected in 2021, Ecology TMDL staff will develop a Water Cleanup plan. To develop this plan, the Lacamas Creek Partnership for Clean Water, led by Ecology, will work collaboratively with local, state, federal, and tribal governments, non-profits, watershed groups, and private landowners to develop and implement the Plan, focused on the implementation of best management practices (BMPs) for water quality.

Compliance Activities

Ongoing:

- **Complaint response:**
    - Ecology staff will utilize the Nonpoint Desk Book Manual and compliance flowchart timelines to respond to sites identified during watershed assessments or via reported concerns. If local partners are not currently working with the responsible party, staff will respond by phone, email, or letter within two weeks after deeming the site a priority of concern to protect water quality.
    - One large dairy closed its business operations within the watershed. Plans are being developed with NRCS and Ecology to decommission the manure lagoons to prevent surface water impacts.

Figure 40. One of 19 dairy manure lagoons being decommissioned in Lacamas Creek Watershed.

ERO Priority Watersheds

Priority Watershed Name: Hangman Creek

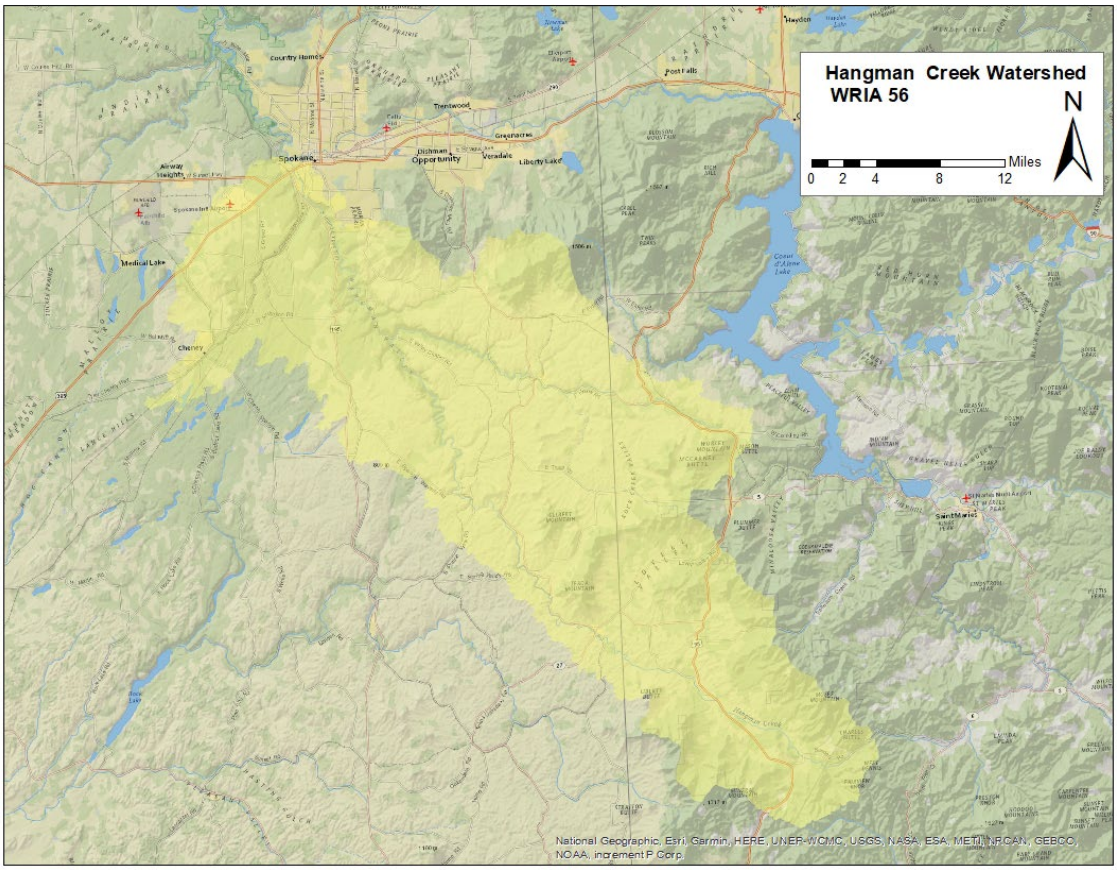

Figure 41. Map of the Hangman Creek Watershed.

Implementing: Hangman Creek Multi-Parameter TMDL/Hangman Watershed Settlement Agreement

Summary/Context Info:

Streams in the Hangman Watershed are impaired by excess bacteria, turbidity, and elevated water temperatures. The watershed is dominated by agricultural nonpoint sources. The watershed was studied to develop a TMDL report and ultimately a TMDL implementation plan. The implementation plan was completed in 2011. The Spokane Riverkeeper challenged the EPA approval of the TMDL. EPA, Ecology, and Riverkeeper negotiated a 10-year agreement that identifies and priorities specific actions to reduce pollution and ultimately make progress towards water quality improvements within the Hangman watershed. The agreement was signed in 2018 and Ecology is actively implementing.

Priority Actions:

Education and Outreach

- **Distribute Public Survey with Spokane Riverkeeper:** Ecology will work with Spokane Riverkeeper to develop a plan to distribute the survey.
- **Direct Mailings to Watershed Residents:** Ecology will print and mail the first in a series of mailers to over 2,500 watershed addresses in 2023. Ecology will also draft subsequent mailings and develop a plan for future distribution.
- **Update Hangman Outreach Strategy:** Ecology will work with the Spokane Riverkeeper to update the Hangman Outreach Strategy document that guides education and outreach efforts in the watershed. The Strategy is intended to be updated every 3 – 5 years to reflect work accomplished, lessons learned, and new priority action items.

Financial Assistance

- **Begin Implementing the Spokane Conservation District**, ***The Direct Seed Loan Program*** **($5,196,914)**: This will be a continuation of the existing Spokane Conservation District equipment loan program for the purchase of direct seed and no-till equipment. The program helps farmers in 19 Eastern Washington counties and 1 western Washington county, purchase direct seed and no-till equipment eliminating a financial barrier to adoption and mitigating thousands of tons of sedimentation and soil erosion from reaching regional water systems. This program was earmarked to receive funding in 2023.
- **Begin Implementing the Spokane Conservation District, *Hangman Creek Agricultural Sediment Abatement Project* ($424,000):** This project will implement stream bank stabilization work across one large agricultural site within the Hangman Creek Watershed. The objective of this project is to reduce sediment contributions and re-establish a naturally resilient stream channel that supports the functions of flow and sediment conveyance without excessive vertical or lateral erosion. This project was earmarked to receive funding in 2023.
- **Continue to Implement the Spokane Tribe of Indians, *DIF Project Maintenance, Riparian Restoration, and Livestock BMPs* Project ($257,868):** This project includes project maintenance on previously installed riparian restoration sites of high priority identified by Ecology within the Hangman watershed.
- **Continue to Implement the Spokane Riverkeeper, *Rock and Hangman Creeks Riparian Restoration and Water Quality Improvement* Project ($256,892):** This project will continue to improve nonpoint pollution issues throughout the watershed by installing 50 acres of riparian plantings, establishing three water quality monitoring locations, 10 water temperature loggers, and provide education and outreach programs to maximize restoration efforts within the watershed.
- **Continue to Implement the Spokane Conservation District, *Spokane Riparian Establishment* Project ($283,500):** This project will implement three projects, two of

which are located in the Hangman watershed. These projects will implement livestock BMPs and riparian restoration.

- **Continue to Implement the *Hangman Riparian Restoration and Conservation Program* ($2,500,000):** This program will provide rental rates with long-term contracts for agricultural riparian land taken out of production and planted with native trees and shrubs. Ecology partnered with Spokane Conservation District on this project. This program will implement approximately 180 acres of riparian tree and shrub plantings along perennial streams in the Hangman watershed.
- **Continue to Implement the Spokane CD, *Making Conservation Pay* Project ($3,000,000):** This loan from State Revolving Funds allowed Spokane County Conservation District to expand their Direct Seed Equipment Loan program to 13 counties in Eastern Washington. This program allows producers to purchase the necessary direct seed equipment to practice low disturbance, direct seed conservation tillage. This loan helps to convert acres in the Hangman Creek farmed with conventional tillage techniques to direct seed. This three year program is well underway and currently providing equipment loans to multiple producers in Eastern WA.
- **Continue to Implement the Spokane CD, *Hangman Creek Streambank Stabilization RM-17 Phase II* Project ($333,333)**: This project builds upon and continues work along Hangman Creek at river mile 17 to stabilize banks, plant riparian buffers and install irrigation systems to improve plant survival. The second phase of the project will prevent an estimated 16,000 tons of sediment from reaching the Spokane River. Designs, materials, and permits were obtained in 2021, and the project was constructed in 2022. Riparian planting maintenance and general monitoring is planned for 2023.
- **Continue to Implement the Spokane CD, *Hangman Creek Agricultural BMP Assistance* Project ($1,500,000):** This project increases community awareness, addresses agricultural sediment pathways, inventories bank erosion contributions, implements 3,000 feet of stream restoration and reduces sediment delivery through producer incentives, cost-share programs and loans. The funding allows the Spokane CD to support producers by focusing implementation at high priority sites identified during Ecology watershed evaluations. This three year grant is well underway providing financial assistance to implement multiple projects throughout the watershed.
- **Continue to Implement the Lands Council, *Hangman Creek Watershed Riparian and Wetland Restoration* Project ($294,600):** This FY22 grant project continues The Land Council's work in the Hangman Watershed by installing BDAs, planting riparian buffers, and educating agricultural producers and local youth in the watershed.

Partner Coordination

- **Host Quarterly Update Meetings with The Spokane Riverkeeper**: Keep the Spokane Riverkeeper up to speed on work in the Hangman Creek Watershed.

- **Host Quarterly Partner Meetings with The Spokane Conservation District**: Meet with the Spokane CD to fund and implement riparian protection and restoration at priority water quality problem sites.
- **Host Coordination Meeting with the Spokane Tribe**: Meet with the Spokane Tribe to fund and implement riparian protection and restoration at priority water quality problem sites.
- **Participate in Coordination Meeting with the Lands Council**: Meet with the Lands Council to discuss restoration projects in the watershed.
- **Participate in Field Tour with Conservation Farmers**: Staff will meet with a farmer group dedicated to conservation farming to understand what they are doing and their perceptions of barriers to conservation practice adoption.

Pollution Identification/Watershed Evaluating

- **Perform Comprehensive Watershed Evaluation:** Ecology staff will document at least 40 non-point pollution problems in the watershed using the eastern Region evaluation process. A minimum of five of these sites will be prioritized using site specific criteria, such as the length of stream impacted and the severity of riparian damage.
- **Prioritize Sites for Technical and Financial Assistance:** 10 tillage sites and 5 livestock sites will be prioritized for further follow up and technical assistance per the Settlement Agreement.

Compliance Activities

- **Contact at Least 15 New Priority Pollution Sites:** At least 15 non-point pollution sites will be prioritized and then contacted both via phone and by certified letter. Staff will offer technical and financial assistance to the landowner to proactively achieve compliance.
- **Contact At least 20 Existing Priority Pollution Sites:** Many sites in the Hangman watershed have been previously contacted but have yet to make the needed changes to protect water quality. Ecology will contact at least 20 of those landowners and again offer technical and financial assistance.
- **Perform Priority Site Field Visits at 25 Properties and Make Recommendations:** Visit at least 25 properties with non-point pollution problems in the watershed to explain water quality problems and steps needed to achieve compliance.
- **Develop 20 Water Quality Protection Plans for Priority Sites:** Develop plans for at least 20 sites to implement BMPs sufficient to fully protect water quality.
- **Implement Water Quality Protection Plans:** Protect and restore at least 8 miles of stream in the Hangman Creek Watershed.
- **Follow Up on Non-Point Complaint Sites:** Contact valid compliant sites with non-point pollution issues and schedule site visits to provide technical and financial assistance.

- **Complete the Enforcement of the Administrative Order issued to SF Rock Creek Agricultural Operation:** In August 2022, Ecology issued an Administrative Order requiring an agricultural operator to implement appropriately sized riparian buffers along SF Rock Creek and its tributaries across two sites they actively farm. The Order was appealed and at the end of 2022 the Pollution Control Hearing Board (PCHB) was reviewing the case. Ecology will continue its due diligence to have the Order implemented.
- **Take Additional Formal Enforcement in Hangman Creek:** Ecology staff will send approximately 10 warning letters and likely issue an additional Administrative Order in fall 2023.

Monitoring Activities

- **Establish Photo Monitoring Points**: Staff will establish photo monitoring points at pollution problem sites and document riparian condition improvements over time.
- **Tracking Non-point BMP implementation:** Ecology staff will be tracking a number of numeric criteria including acres of riparian area planted, linear feet of stream restored, feet or miles of exclusion fencing, acres of conservation tillage. Staff will also be tracking and reporting on the success of the watershed evaluation efforts including number of sites contacted, number of plans developed, number of sites brought into compliance, etc.

Priority Watershed Name: Little Spokane River

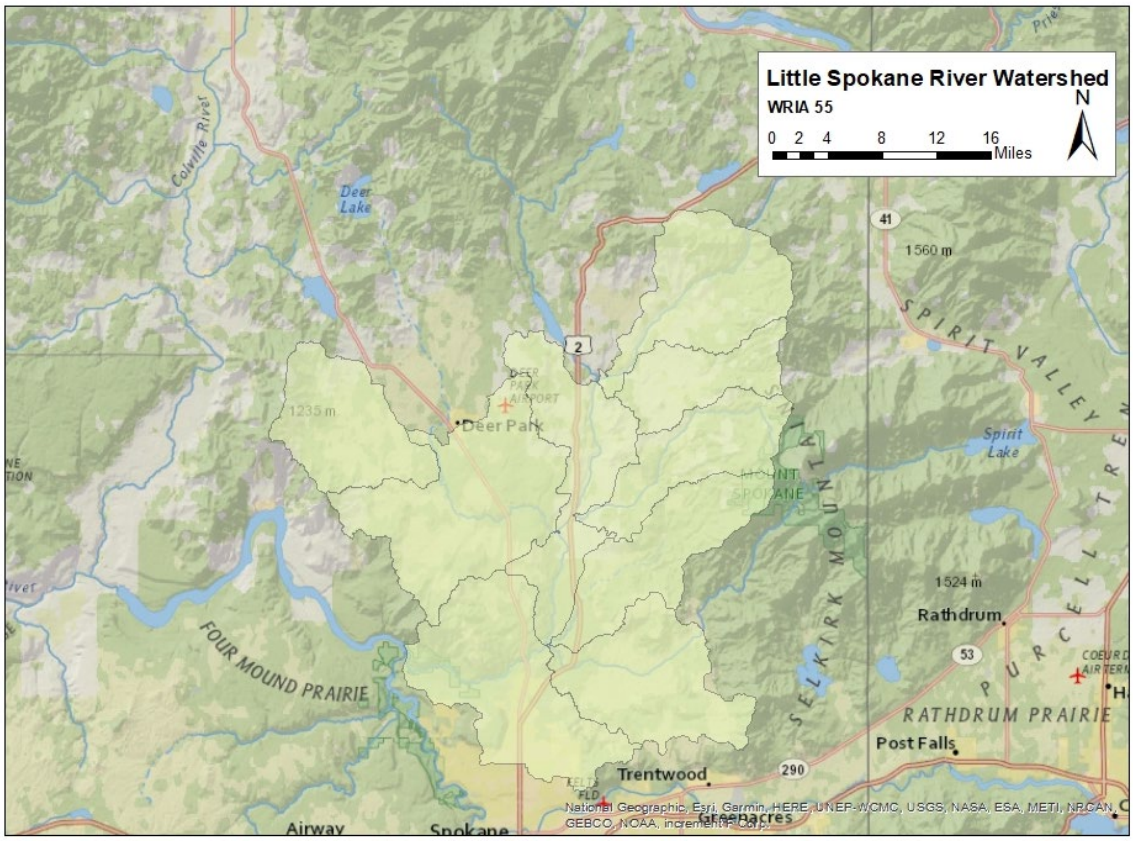

Figure 42. Map of the Little Spokane River watershed.

Implementing: Little Spokane River TMDLs for bacteria, temperature, dissolved oxygen, total phosphorus, and pH

Summary/Context Info:

Ecology finalized the Little Spokane River DO, TP, and pH TMDL and submitted it to EPA in December 2020. The TMDL was approved by EPA in January 2021. Ecology is now focused on implementing this TMDL and the 2012 fecal coliform, temperature, and turbidity TMDL. The water quality impairments in the Little Spokane are primarily due to non-point pollution problems. The TMDL identifies riparian health as a key to meeting water quality standards. Implementation work is focused on protecting and restoring riparian areas and upland farming practices that deliver sediment to surface water.

Priority Actions:

Education and Outreach

- **Perform Comprehensive GIS Evaluation of Riparian Health**: Using aerial imagery, staff will describe current riparian condition for each parcel adjacent to a stream in the

watershed. As improvements are made, staff will update the map and track improving riparian health.

- **Perform Outreach with Friends of Little Spokane:** Ecology staff will partner with the non-profit to share information with their organization members on water quality goals and stream restoration funding opportunities.
- **Little Spokane Website Update**: Transition website information from TMDL development information to TMDL implementation tracking and reporting. Ensure website is regularly updated with information on implementation progress.

Financial Assistance

- **Continue to Implement the Edison DIF Project**: Staff will work with the Spokane Tribe to implement BMPs at a high priority complaint site on mainstem Little Spokane. Ecology will use $75,000 of DIF funds to exclude cattle a minimum of 75 feet from the ordinary high water mark, provide off-stream water, and plant native trees and shrubs.
- **Partner with Spokane CD and Spokane Tribe to Request Funding**: Work to ensure funding is available via the state Centennial/319 program or other sources. The goal will be to support landowners to implement riparian and tillage BMPs when sites are identified and prioritized via the Little Spokane Watershed Evaluation.

Partner Coordination

- **Host Quarterly Update Meetings with The Spokane Riverkeeper**: Keep the Spokane Riverkeeper up to speed on work in the Little Spokane Watershed.
- **Host Quarterly Partner Meetings with The Spokane Conservation District**: Meet with the Spokane CD to fund and implement riparian protection and restoration at priority water quality problem sites.
- **Host Coordination Meeting with the Spokane Tribe**: Meet with the Spokane Tribe to fund and implement riparian protection and restoration at priority water quality problem sites.
- **Participate in Coordination Meeting with the Lands Council**: Meet with the Lands Council to discuss restoration projects in the watershed.
- **Participate in Field Tour with Conservation Farmer**: Staff will meet with a farmer dedicated to conservation farming to understand what they are doing and perceptions of barriers to conservation practices.

Pollution Identification/Watershed Evaluating

- **Perform Comprehensive Watershed Evaluation:** Ecology staff will document at least 40 non-point pollution problems in the watershed using the eastern Region evaluation process. A minimum of five of these sites will be prioritized using site specific criteria, such as the length of stream impacted and the severity of riparian damage.

Compliance Activities

- **Contact at Least Five Priority Pollution Sites:** At least five non-point pollution sites will be prioritized and then contacted both via phone and by certified letter. Staff will offer technical and financial assistance to the landowner to proactively achieve compliance.
- **Perform priority site field visits and make recommendations:** Visit at least five properties with non-point pollution problems in the watershed to explain water quality problems and steps needed to achieve compliance.
- **Develop Water Quality Protection Plans for priority Sites:** Develop plans for at least five sites to implement BMPs sufficient to fully protect water quality.
- **Implement Water Quality Protection Plans:** Protect and restore at least two miles of stream in the Little Spokane Watershed.
- **Follow up on non-point complaint sites:** Contact valid compliant sites with non-point pollution issues and schedule site visits to provide technical and financial assistance. Follow-up to ensure water quality is protected at these sites.
- **Formal Enforcement at Peone Creek:** A livestock site in this watershed has been sent multiple technical assistance letters and a warning letter and no progress was achieved. Ecology issued an Administrative Order requiring specific BMPs at the site. Additional formal enforcement may be needed to achieve compliance at the site.

Monitoring Activities

- **Tracking Non-Point BMP Implementation:** Ecology staff will be tracking a number of numeric criteria including acres of riparian area planted, linear feet of stream restored, feet or miles of exclusion fencing, acres of conservation tillage. Staff will also be tracking and reporting on the success of the watershed evaluation efforts including number of sites contacted, number of plans developed, number of sites brought into compliance, etc.
- **Establish Photo Monitoring Points**: Staff will establish photo monitoring points at pollution problem sites and document riparian condition improvements over time.

Priority Watershed Name: Blue Mountain Snake River Tributaries

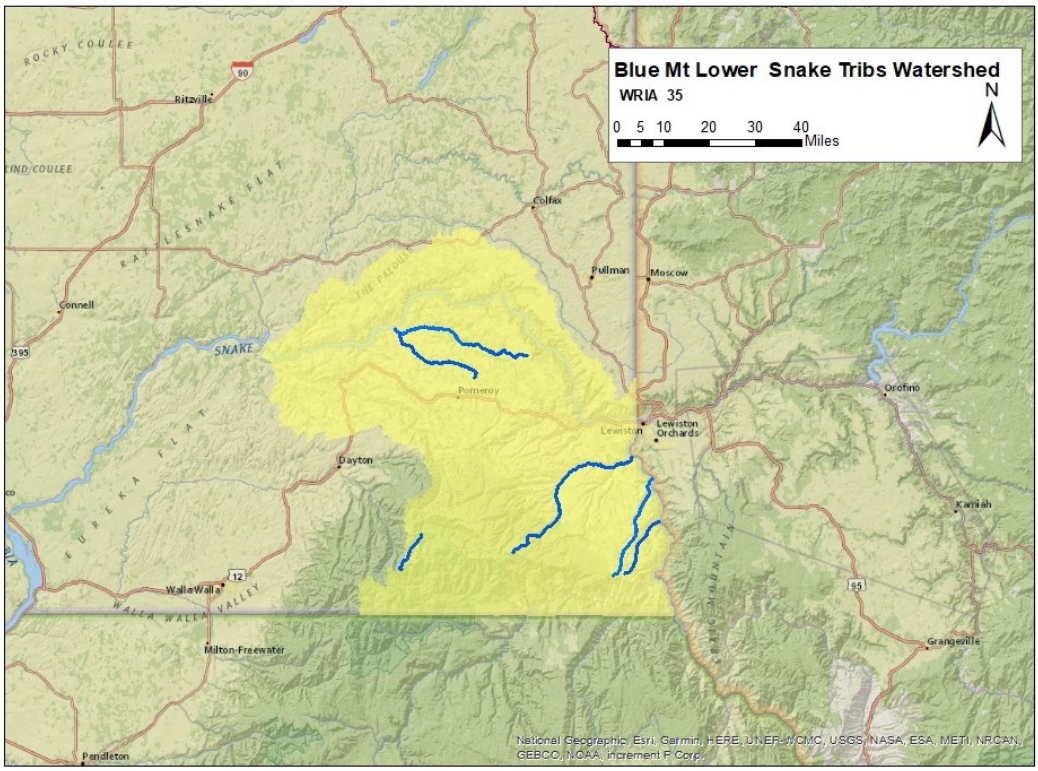

Figure 43. Map showing Snake River Tributaries (Asotin Creek, Alpowa Creek, Deadman Creek, Meadow Creek, Tenmile Creek and Couse Creek)

Implementing: Asotin Creek STI and Alpowa Creek, Deadman and Meadow Creeks, Tenmile Creek, and Couse Creek 4b projects

Summary/Context Info:

The Blue Mountain/Lower Snake tributaries comprise all the Snake River tributaries ranging across Columbia, Garfield, and Asotin Counties except for the Tucannon River. These drainages primarily originate in the Blue Mountains or foothills surrounding the region. The headwaters and upstream sections are often forested with minimal land-use and switching to agriculturally dominated lower reaches. Livestock grazing still remains an ongoing concern throughout the watershed. Ecology has initiated 4b Straight to Implementation strategies in these watersheds, provided the lack of point sources and significant progress is being made to address well understood nonpoint pollution issues. Ecology is actively working in these watersheds to continue to implement projects and work with stakeholders to address these issues.

Priority Actions:

Education and Outreach

- **Attend Two Conservation District Board Meetings:** The CD boards are made up of area farmers and ranchers. Staff will attend two board meetings to inform the CD board of

on-going water quality work in the Blue Mountains, collaborate on project implementation, and answer questions on efforts to implement STI and 4b projects.

- **Partner with the Asotin Conservation on Outreach Efforts:** District staff will continue to produce newsletters, flyers, and articles pertaining to water quality protection and BMP implementation for various groups throughout Asotin County. The district will continue to host public events through workshops and open houses focused on water quality education. An FY22 grant is continuing these efforts.

Financial Assistance

- **Implement the Asotin County Conservation District Water Quality Enhancement Project ($333,333):** This grant will implement various BMPs across 40,000 stream feet of Asotin County tributaries including a minimum of 20,000 plantings. BMPs will include riparian buffers, streambank stabilization, livestock exclusion, and direct seeding. The project supports implementation at priority sites identified via Ecology watershed evaluations. This grant is active through the end of 2024.
- **Implement the Blachly Deadman Creek CREP Partnership Project ($29,500):** Staff will continue to partner with the Pomeroy CD to address a long-term livestock issues in the Deadman Creek watershed. The site had received multiple technical assistance contacts and a warning letter from Ecology. These funds will be utilized along with CREP funding to exclude livestock from 2 miles of stream and provide livestock watering to further protect water quality along Deadman Creek. The water development was installed and the CREP implementation is still progressing.

Partner Coordination

- **Host Quarterly Asotin County Conservation District Coordination Meetings:** Ecology works closely with the staff at Asotin CD to identify issues, coordinator plan/projects, and provide technical assistance to the public in Asotin County.
- **Host Quarterly Pomeroy Conservation District Coordination Meetings**: Ecology works closely with the staff at Columbia CD to identify issues, coordinator plan/projects, and provide technical assistance to the public in Columbia County.
- **Partner with the Columbia Conservation District:** Ecology will continue to work to develop a closer relationship with newly hired CD staff to identify issues, coordinate plan/projects, and provide technical assistance to the public in Columbia County.
- **Participate on the Snake River Salmon Recovery Board RTT:** Ecology consistently works with various stakeholders involved in salmon recovery efforts in the region. As a lead entity voting member and a member of the Regional Technical Team, Ecology assists with the SRSRB annual grant round and provides technical assistance for water quality issues as they relate to salmon recovery and habitat restoration.

- **Participate in Snake River Local Working Group Meeting**: Ecology staff participate in this basin wide working group focused on challenges and solutions to the greater Snake River watersheds.

Pollution Identification/Watershed Evaluating

- **Perform Comprehensive Watershed Evaluation**: Annual surveys will be conducted during the early spring season to identify livestock water pollution issues. Work will be focused on a majority of Snake River tributaries including the Tucannon River, Pataha Creek, Deadman Creek, Meadow Creek, Alpowa Creek, Asotin Creek, Tenmile Creek, Couse Creek, and associated tributaries.

Compliance Activities

- **Contact at Least Five Priority Pollution Sites**: Approximately 5 new landowners with livestock water quality issues will be contacted via technical and financial assistance letters. All letters are followed up with multiple phone calls (if contact number is available) throughout the year to ensure continued communication with the landowner.
- **Follow-Up on Previous Years Priority Sites**: Landowners who have received technical assistance letters in previous years (same numbers as mentioned above), and who remain out of compliance, will be contacted through additional phone calls and follow-up technical/financial assistance letters.
- **Develop Water Quality Protection Plans for Priority Sites:** Staff will set up site visits and work to develop BMP plans for at least five sites. The plans will include riparian buffers designed to fully protect water quality.
- **Implement Water Quality Protection Plans:** Protect and restore at least three miles of stream in the Blue Mountain Tributaries.
- **Send Warning Letters to Priority Sites**: If a landowner has received multiple letters and continues to remain out of compliance, Ecology will escalate to a warning letter with an expectation of response within 30 days. Ecology anticipates sending warning letters to approximately five sites.
- **Take Formal Enforcement Action**: The eastern region expects that one formal enforcement action will be issued in the Blue Mountain tributaries to address non-point pollution at a high priority site.
- **Follow-up on Non-point WQ Complaints:** Staff will continue to respond to any water quality complaints received from the public. Phone calls and/or letters may follow after staff have confirmed a water quality issue exists.

Monitoring Activities

- **Establish Photo Monitoring Points**: Staff will establish photo monitoring points at pollution problem sites and document riparian condition improvements over time.

- **Perform Asotin Creek Temperature Monitoring**: Partner with Asotin CD to monitor temperature at sites identified in the STI strategy. Monitoring helps evaluate effectiveness of BMP implementation.
- **Perform 4b Effective Monitoring**: Staff will monitor at 12 sites in six Snake River 4b (Straight to Implementation) watersheds to evaluate BMP effectiveness. Monitoring will occur twice monthly. The monitoring will be performed under a Quality Assurance Project Plan for multiple non-point parameters addressed by 4b strategies.

Priority Watershed Name: Whitman Snake Tributaries

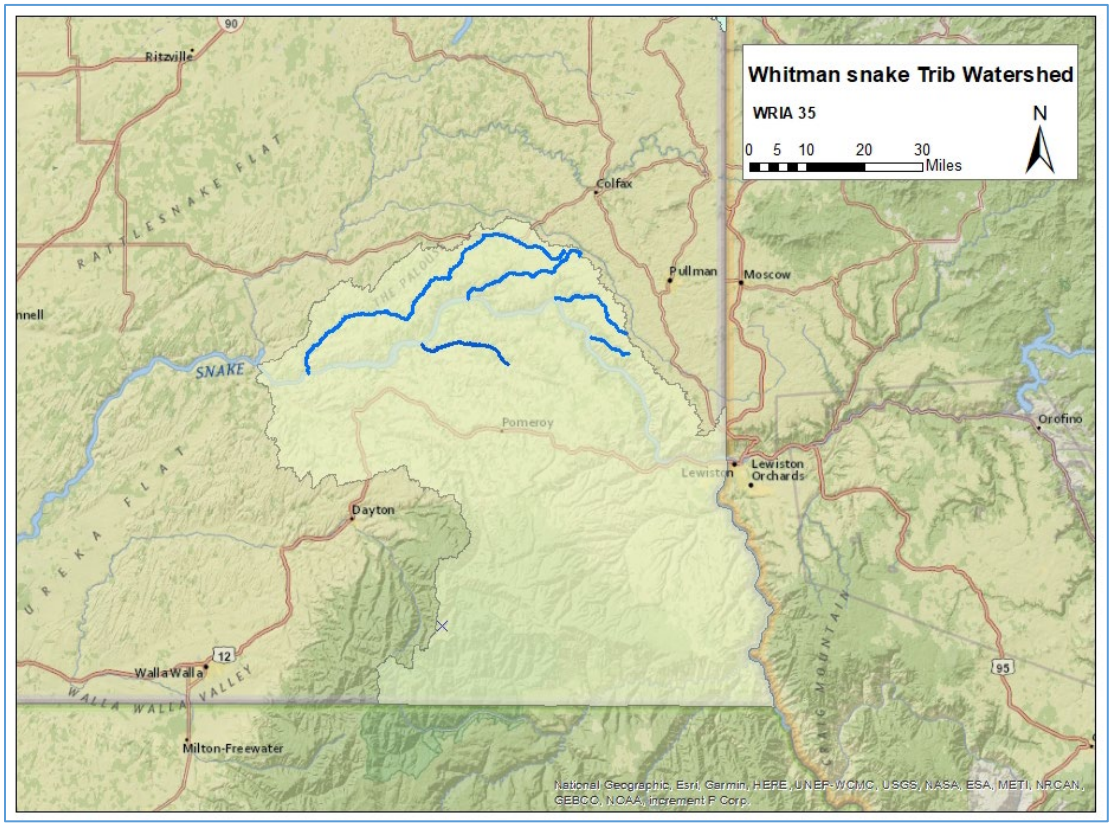

Figure 44. Map showing Snake River Tributaries (Steptoe Creek, Almota Creek and Alkali Flat Creek)

Implementing: Steptoe Creek STI, Early Implementation Actions for Almota Creek and Alkali Flat Creek STIs (In development)

Summary/Context Info:

A number of northern Snake River tributaries in Whitman County have been identified as Category 5 on the Water Quality Assessment. Some watersheds currently have established Straight to Implementation Strategies in place (Steptoe Creek) and others currently in development (Almota Creek and Alkali Flat Creek). These northern tributaries are largely dominated by agricultural land-use with livestock issues often impacting the riparian habitat. Ecology has continued to work with local stakeholders through project implementation and technical assistance to further combat these issues.

Priority Actions:

Education and Outreach

- **Partner with the Palouse Conservation District on Conservation Tillage Education:** Through grant funds PCD hosts various presentations, tours, and outreach materials for local producers on conservation tillage and riparian buffers. PCD has utilized multiple

Ecology grants to develop a conservation tillage cost-share program which is well advertised throughout the district's footprint and beyond.

- **Partner with the Whitman Conservation on Outreach to Students:** District staff visit K-12th grade classrooms giving presentations on restoration practices while university students participate in volunteer planting events.

Financial Assistance

- **Implement the Whitman Conservation District, *Water Quality Enhancement through Restoration of Function Project* ($210,000)**: This grant will continue to work off previous efforts to continue to exclude livestock, establish riparian buffers, and install instream structures, to improve water quality throughout the Alkali Flat Creek watershed.
- **Implement the Palouse Conservation District, *Supporting Sustainable Ranching on Snake River Tributaries* ($500,000)**: The PCD will work with livestock producers along both Steptoe Creek and Wawawai Canyon to install livestock BMPs, increase monitoring, and provide education/outreach to local livestock producers. The grant provides funding to help install riparian buffers at livestock priority pollution sites identified by Ecology staff.

Partner Coordination

- **Host Quarterly Meetings with the Whitman Conservation District:** Ecology works closely with the staff of Whitman CD to identify issues, coordinator plan/projects, and provide technical assistance to the public in the region.
- **Host Quarterly Meetings with the Palouse Conservation District**: While much of the work the Palouse CD revolves around the Palouse Watershed, their district falls within the boundaries of both Steptoe Creek and Wawawai Canyon. Ecology works heavily with PCD staff through various project implementation, technical assistance, and events.
- **Participate with the Snake River Salmon Recovery Board:** Ecology consistently works with various stakeholders involved in salmon recovery efforts in the region, including Walla Walla. As a lead entity voting member and a member of the Regional Technical Team, Ecology assists with the SRSRB annual grant round and provides technical assistance for water quality issues as they relate to salmon recovery and habitat restoration.
- **Participate with the Snake River Local Working Group**: Ecology staff participate in this basin wide working group focused on challenges and solutions to the greater Snake River watersheds.
- **Attend at least two CD board meetings:** CD boards are composed of farmers and ranchers in that district. Staff will participate in board meetings to inform them of our on-going non-point pollution work and answer questions.

Pollution Identification/Watershed Evaluating

- **Perform Comprehensive Watershed Evaluation**: Annual surveys will be conducted during the early spring season to identify livestock water pollution issues. Work will be focused on a majority of Snake River tributaries including Alkali Flat Creek, Penawawa Creek, Almota Creek, Wawawai Canyon, and their associated tributaries.
- **Prioritize Sites for Technical and Financial Assistance:** Sites are evaluated along with all other Snake River and Palouse watershed tributaries to determine roughly 5 new technical and financial letters.
- **Respond to Non-Point Complaints:** ERO responds to all water quality related complaints in the watershed. If pollution site is identified to be of concern, ERO will send a follow-up technical assistance letter to further address the water quality concern.

Compliance Activities

- **Contact at Least Five New Priority Sites:** Staff will contact landowners with livestock water quality issues via technical and financial assistance letters. All letters are followed up with multiple phone calls (if contact number is available) throughout the year to ensure continued communication with Ecology and landowner.
- **Contact at Least Five Existing Priority Pollution Sites:** Follow-up with landowners who have received technical assistance letters in previous years and who remain out of compliance. May continue to contact through additional phone calls and follow-up technical/financial assistance letters.
- **Send Warning Letters to Approximately Three Landowners:** If a landowner has received multiple letters and continues to remain out of compliance, ERO will send a warning letter. The warning letter is the last offer of proactive assistance prior to a formal enforcement action.
- **Perform Priority Site Field Visits at Five Properties and Make Recommendations:** Visit at least 5 properties with non-point pollution problems in the watershed to explain water quality problems and steps needed to achieve compliance.
- **Develop 5 Water Quality Protection Plans for Priority Sites:** Develop plans for at least 5 sites to implement BMPs sufficient to fully protect water quality.
- **Implement Water Quality Protection Plans:** Protect and restore at least 2 miles of stream in the Whitman Direct Tribs Watersheds.
- **Ensure Final Steptoe Order Implementation:** An administrative order was sent to a landowner in the Steptoe Creek Watershed in 2019 addressing ongoing livestock pollution issues. Since the order was sent, Ecology, along with the partnership of the Palouse CD have developed a plan to address the site. Most of the riparian buffer and Order elements have been implemented. A final step will be completed as part of an FY22 grant that extends through 2025.

Monitoring Activities

- **Partner with the Palouse Conservation District to monitor in Steptoe Creek**: Monitoring will help ensure livestock BMPs implemented in the watershed work to fully protect water quality. This will help adaptive management in the watershed.
- **Establish Photo Monitoring Points**: Staff will establish photo monitoring points at pollution problem sites and document riparian condition improvements over time.

Priority Watershed Name: Palouse River

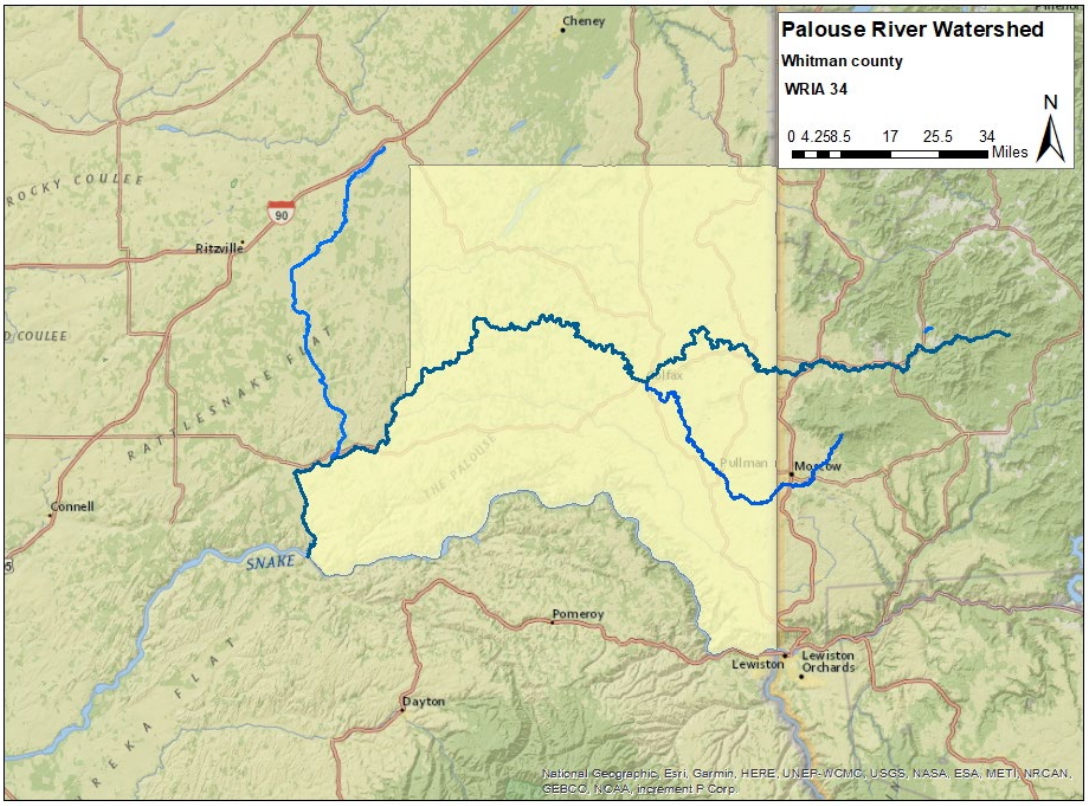

Figure 45. Map of the Palouse River watershed

Implementing: Multiple TMDLs for bacteria, temperature, dissolved oxygen, pH, and toxics

Summary/Context Info:

Streams in the Palouse Watershed are impaired by excess bacteria, DO, pH, toxics, and elevated water temperatures. The watershed is dominated by agricultural nonpoint sources. The watershed and its sub basins have been studied several times and multiple TMDL reports, and subsequent implementation plans have been developed. In addition, a Straight to Implementation strategy is being finalized for Spring Flat Creek, a tributary of the South Fork Palouse River. Staff are also currently implementing the following TMDL plans: North Fork Palouse Fecal Coliform Bacteria, DO, and pH TMDL; Palouse River Fecal Coliform Bacteria TMDL; Palouse River Temperature TMDL; Palouse River Toxics TMDL; South Fork Palouse Ammonia TMDL; South Fork Palouse DO, pH, and temperature TMDL; and South Fork Fecal Coliform TMDL.

Priority Actions:

Education and Outreach

- **Attend Three Conservation District Board Meetings:** The CD boards are made up of area farmers and ranchers. Staff will attend three board meetings to inform the CD

board of on-going water quality work in the Palouse River watershed, collaborate on project implementation, and answer questions on efforts to implement projects.

- **Perform Outreach for Spring Flat Creek STI**: Staff will inform Spring Flat watershed residents of the need to protect water quality by implementing specific actions outlined in the strategy.

Financial Assistance

- **Begin Implementing the Palouse Conservation District Spring Flat Creek Project ($345,445):** High stream temperatures, low dissolved oxygen levels, and high pH values have recently been identified as problems in Spring Flat Creek (SFC), a tributary of the South Fork Palouse River. This project will improve water quality in the SFC watershed by providing riparian buffer installation, technical assistance and conservation planning, direct seed cost share, environmental monitoring, and education and outreaching, including planning meetings, workshops, tours, articles, and signage. This three year project will begin implementation in 2023.
- **Begin Implementing the Whitman Conservation District, Palouse River Habitat Restoration and Stabilization Project ($468,250):** Assessment Category 5 and 4A listings have specifically listed the Palouse River as impaired for pH. Increased temperature, and dissolved oxygen. To address these issues, the Whitman Conservation District (WCD) has identified multiple project sites for riparian restoration in the Palouse River Watershed. This proposal will add to several other projects to help reduce sediment, pollution and increase water quality. This three year project will begin implementation in 2023.
- **Continue to Implement the Palouse Conservation District the Water Quality Saga: A Cost-Share-nary Tale Project ($666,666):** This three year project will continue to improve water quality in Whitman County streams by implementing a minimum of ten acres of riparian buffer and 6,750 acres of direct seeding. The project will conduct monitoring efforts on changes in crop residue cover with conservation farming practices and implement an outreach and education program to further improve water quality awareness throughout Whitman County.
- **Continue to Implement the Palouse Conservation District Direct Seed Partnership on the Palouse Project ($666,666):** This project currently builds on partnerships developed in the Palouse Watershed Regional Conservation Partnership Program (RCPP) by implementing Best Management Practices (BMP) on agricultural lands in Whitman County. The project has been installing 9,000 acres of direct seeding (including 750 acres of fallow), implementing riparian buffers, monitoring water quality, and providing educations/outreach programs to further improve water quality in the Palouse River watershed.
- **Continue to Implement the Palouse Conservation District Direct Paradise Creek Riparian Restoration Project ($333,333):** This project continued to improve nonpoint pollution issues throughout the creek by installing riparian buffers, monitoring water

quality, and providing education and outreach programs to maximize restoration efforts along this Palouse watershed subbasin.

- **Continue to Implement the Palouse Conservation District Direct Seed Partnership Implementation and Monitoring Project ($625,000):** This project implemented four miles of riparian buffers and 13,500 acres of direct seeding to improve water quality in the Palouse River watershed. The project also monitored the effects of riparian restoration and converting from conventional tillage to direct seeding to determine effects on stream water quality.
- **Continue to Implement the Palouse Conservation District Thinking outside the Fertilizer Box: Conservation on Union Flat Creek Project ($666,666):** This project continued to implement 8.5 acres of riparian buffers and 9,000 acres of direct seeding to improve water quality in the Palouse River Watershed. Effects of riparian restoration and conversion from conventional tillage to direct seeding have been monitored to determine effects on stream water quality. This project also implemented a demonstration project for precision nutrient management on 1,200 acres, providing outreach and education with field days, workshops, and curriculum development.
- **Continue to Implement the Palouse Conservation District Palouse Basin BMP Implementation for Water Quality Improvement ($666,500):** This project addressed and improved water quality issues identified at multiple sites in the Palouse River watershed on both the North and South Fork Palouse River and on Union Flat Creek. Riparian restoration activities reduced nonpoint source pollution, regulated water temperature, decreased soil erosion, and increased bank stability. Additional livestock best management practices (BMPs) were implemented as needed including exclusion fencing, off-stream watering, and livestock crossings.
- **Continue to Implement the Palouse Conservation District Full Stream Ahead! Riparian Restoration Innovations on the Palouse River Project ($666,666):** Riparian buffers improve water quality, yet in artificially-drained agricultural regions, water can bypass riparian soils and plant roots, reducing their capacity to remove nutrients. This multi-approach project will restore 15 ac (1.5 miles), install four beaver dam analogs (BDAs), and construct three saturated riparian buffers, a new conservation practice that facilitates riparian nitrogen removal, to improve water quality in the South Fork Palouse River watershed. This three year project began implementation in 2022.
- **Continue to Implement the Palouse Conservation District Do the Residue! Promoting Direct Seed Operations on the Palouse Project ($666,666):** The PCD will lead the implementation of five acres of riparian buffers and 9,000 acres of direct seeding to improve water quality in Whitman County streams. A survey of producers will assess direct seed adoption by conservation program participants. Crop residue monitoring and outreach and education programs, including the Alternative Cropping Symposium and Direct Seed Breakfasts, will lead to further water quality improvements in the Palouse River watershed.

- **Continue to Implement the Palouse Rock Lake Conservation District Improving Water Quality on Rebel Flat Creek Project ($555,467):** Concerns regarding water quality and soil erosion on the Palouse create a high demand for best management practices aimed to reduce nonpoint source pollutants. This project will improve water quality and the culture of conservation by implementing 9,990 acres of conservation tillage, restoring, and maintaining two miles of riparian habitat, excluding livestock from stream access, creating cover crop demonstrations, and providing various education and outreach opportunities.
- **Continue to Implement the Palouse Rock Lake Conservation District One Pass at a Time- Conservation of Pine Creek Watershed ($491,156):** Pine Creek of the Palouse Watershed fails state water quality standards by multiple parameters. This proposal will address these failures and improve water quality by 1) Implementing 6750 acres of conservation tillage practices in the Pine Creek subwatershed through cost-sharing to reduce erosion and nonpoint source pollution 2) Implementing 1 mile of riparian enhancement in the Pine Creek subwatershed 3) demonstrate cover cropping as a viable chemical fallow alternative and 4) conduct local outreach and education.
- **Continue to Implement the Palouse Conservation District Partnership to Restore Riparian Areas in the Lower Fourmile Creek Watershed Project ($661,541):** Riparian buffers improve water quality and ecological functions of streams. This project will restore 30 acres of riparian areas (23,000 streambank feet) in the lower Fourmile Creek watershed, including installing up to 600 feet of streambank protection and 10 to 12 beaver dam analogues, providing technical assistance, assessing revegetation methods, installing interpretive signs, and developing place-based curriculum on riparian restoration and conservation agriculture.
- **Continue to Implement the Palouse Conservation District Operation Residue: (Under) cover Crops & Direct Seeding on the Palouse Project ($590,716):** Palouse Conservation District (PCD) will lead implementation of one stream mile of riparian forest buffer and 6,000 acres of direct seeding to improve water quality in Whitman County streams. A cover crop demonstration project will assist producers in improving soil health on their farms. Soil health assessment of direct seed and cover crop projects will demonstrate project effectiveness, and outreach and education programs will lead to further community investment in water quality improvements.

Partner Coordination

- **Host Quarterly Palouse Conservation District Coordination Meetings:** Ecology works closely with the staff at Palouse CD to identify issues, coordinate on plan/projects, and provide technical assistance to the public in Whitman County.
- **Host Quarterly Palouse Rock Lake Conservation District Coordination Meetings**: Ecology works closely with the staff at Palouse Rock Lake CD to identify issues,

coordinate on plan/projects, and provide technical assistance to the public in Whitman County.

- **Host Quarterly Whitman Conservation District Coordination Meetings**: Ecology works closely with the staff at Whitman CD to identify issues, coordinate on plan/projects, and provide technical assistance to the public in Whitman County.
- **Partner with the Pine Creek Conservation District:** Ecology would like to develop a working relationship with Pine Creek CD staff to identify issues, coordinator plan/projects, and provide technical assistance to the public in Whitman County.
- **Participate on the Palouse Regional Conservation Partnership Program (RCPP):** Ecology was an active participant in the first Palouse RCPP (2016-2021), and the renewal of that RCPP was approved (2021-2027). Combined, the two RCPPs will have contributed over $14 million towards conservation practices in the Palouse watershed.

Pollution Identification/Watershed Evaluating

- **Perform Comprehensive Watershed Evaluation**: Annual surveys will be conducted during the early spring season to identify livestock water pollution issues. Work will be focused on a majority of the North and South Fork Palouse and tributaries.

Compliance Activities

- **Contact at Least Five Priority Pollution Sites**: Approximately 5 new landowners with livestock water quality issues will be contacted via technical and financial assistance letters. All letters are followed up with multiple phone calls (if contact number is available) throughout the year to ensure continued communication with the landowner. The Spring Flat watershed will be emphasized in watershed evaluation prioritization.
- **Follow-Up on Previous Years Priority Sites**: Landowners who have received technical assistance letters in previous years (same numbers as mentioned above), and who remain out of compliance, will be contacted through additional phone calls and follow-up technical/financial assistance letters.
- **Develop Water Quality Protection Plans for Priority Sites:** Staff will set up site visits and work to develop BMP plans for at least five sites. The plans will include riparian buffers designed to fully protect water quality.
- **Implement Water Quality Protection Plans:** Protect and restore at least three miles of stream in the Palouse River watershed.
- **Send Warning Letters to Priority Sites**: If a landowner has received multiple letters and continues to remain out of compliance, Ecology will escalate to a warning letter with an expectation of response within 30 days. Ecology anticipates sending warning letters to approximately five sites.
- **Take Formal Enforcement Action**: The eastern region expects that one formal enforcement action will be issued in the Palouse River watershed to address non-point pollution at a high priority site.

- **Follow-up on Non-point WQ Complaints:** Staff will continue to respond to any water quality complaints received from the public. Phone calls and/or letters may follow after staff have confirmed a water quality issue exists.

Monitoring Activities

- **Establish Photo Monitoring Points**: Staff will establish photo monitoring points at pollution problem sites and document riparian condition improvements over time.
- **Continue to partner with Palouse CD on Monitoring work**: Palouse CD has taken the lead on monitoring efforts in the Palouse watershed. Ecology will continue to partner with Palouse CD on that effort.

Priority Watershed Name: Walla Walla Watershed

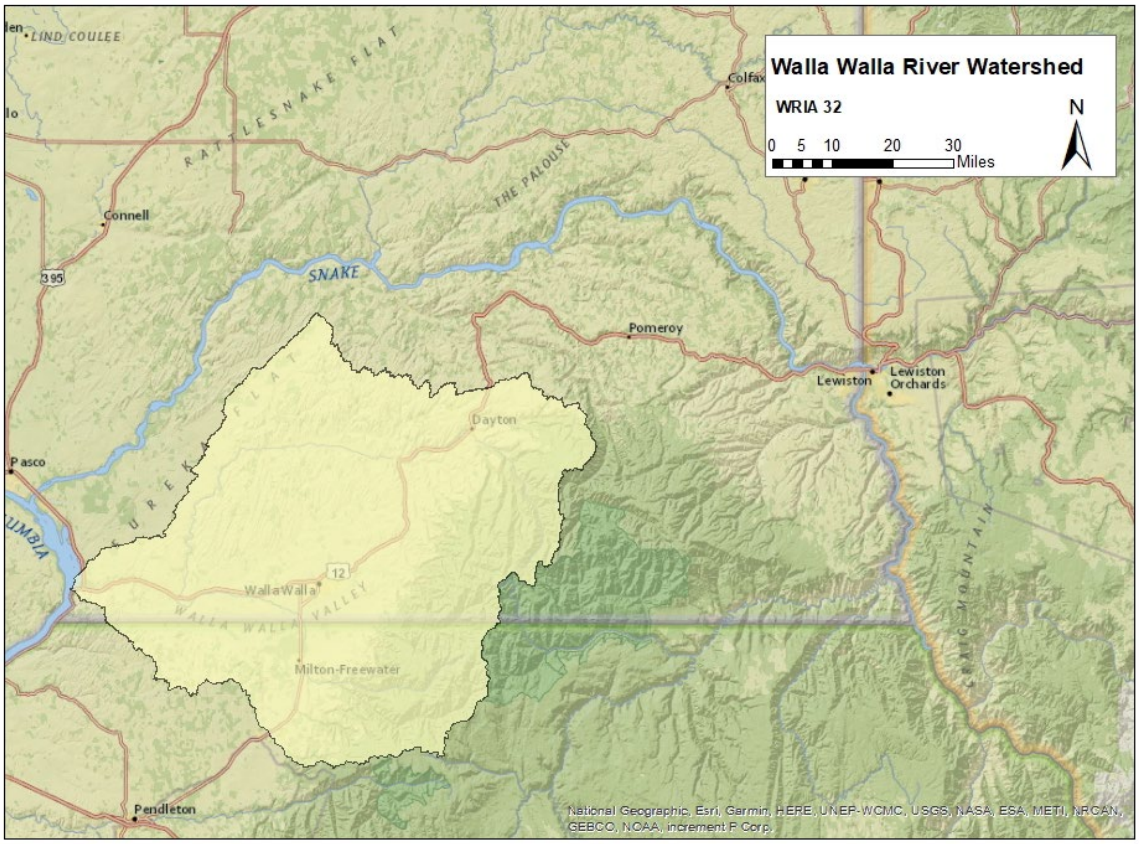

Figure 46. Map of the Walla Walla River Watershed

Implementing: Walla Walla River Watershed Multiparameter TMDLs (Bacteria, Temperature, pH, DO, Toxics)

Summary/Context Info:

The Eastern Region is continuing to implement the Walla Walla Watershed Multiparameter TMDL Water Quality Implementation Plan. A recent effectiveness monitoring study was completed in the watershed and published in 2021. Ecology has been active throughout the watershed through collaborating with stakeholders, funding restoration projects, and identifying new and ongoing water quality concern sites through annual watershed evaluations. The evaluations identify parcels with pollution problems. Regional staff then work with landowners and local partners to implement appropriately sized riparian buffers.

Priority Actions:

Education and Outreach

- **Partner with Kooskooskie Commons on Farm BMP Outreach:** Ecology will partner on enhanced technical assistance outreach for environmental farm practices and riparian

buffer management in the Walla Walla watershed. Kooskooskie Commons and Ecology will hold various meetings, workshops, and tours in the region.

- **Install Touchet River Riparian Signs**: Walla Walla County Conservation district and Ecology will install educational signs along the Touchet River where newly established buffer are implemented.
- **Attend Two Conservation District Board Meetings:** The CD boards are made up of area farmers and ranchers. Staff will attend two board meetings to inform the CD board of on-going water quality work in the Walla Walla watershed, collaborate on project implementation, and answer questions on efforts to implement TMDL projects.

Financial Assistance

- **Complete the Walla Walla County Conservation District, Canopy Cover Improvements on the Touchet River Project ($170,604):** This grant improved riparian habitat and water quality along the Touchet River by removing invasive false indigo and planting 3 miles of riparian vegetation to address temperature issues. This grant expires on 8/31/2023.
- **Complete the Kooskooskie Commons, Improving Water Quality in Yellowhawk Creek and W. Little Walla Walla River Project ($159,691):** This grant implemented riparian buffers along Yellowhawk Creek and the West Little Walla Walla River to address temperature and fecal coliform impairments. The funding continued water quality monitoring throughout the watershed and supported education and outreach efforts in the Walla Walla region. This grant expires on 8/31/2023.
- **Implement the Walla Walla County Conservation District, Last Chance Road Restoration at RM 35.5 Project ($347,217):** This grant supports restoration of a half-mile stretch of the Walla Walla River by installing bio-engineered structures to increase pooling and planting trees to cool the water temperature in the reach. Construction is planned to start in July 2023. The grant is active through 2024.
- **Implement the Walla Walla County Conservation District, Canopy Cover Improvements on the Touchet River – Phase 2 Project ($312,864):** This grant continues work to address temperature issues in the Touchet River by removing invasive false indigo and planting 2.5 miles of riparian vegetation. This grant is active through 2025.
- **Implement the Kooskooskie Commons, Water Quality Improvements on Yellowhawk Creek Project ($317,886):** This grant supports implementation of a riparian restoration program along Yellowhawk Creek and the Walla Walla River to address temperature and fecal coliform impairments resulting from legacy agricultural practices. Kooskooskie Commons will install native riparian buffers, monitor water quality, perform public outreach, and explore land trust easements for long-term protection of riparian areas and water trust agreements to protect flows and cold-water inputs to the stream. This grant is active through 2025.

Partner Coordination

- **Host Quarterly Meetings with the Walla Walla County Conservation District**: Ecology staff work closely with the conservation district staff in planning and implementing Ecology grant funded projects.
- **Participate on the Snake River Salmon Recovery Board Technical Team:** Ecology works with various stakeholders involved in salmon recovery efforts in Walla Walla. As a lead entity voting member and a member of the Regional Technical Team, Ecology assists with the SRSRB annual grants and provides technical assistance to the group for water quality issues.
- **Participate in the Mill Creek Working Group:** Ecology staff participates in the monthly working group focused on the Mill Creek Watershed and the flood control zone of Mill Creek operated by the Army Corps of Engineers.
- **Participate in the Snake River Local Working Group:** Ecology staff participate in this basin wide working group focused on challenges and solutions to the greater Snake River watersheds.
- **Participate in the Walla Walla 2050 Planning Efforts:** Ecology's Office of the Columbia River are partnering with local stakeholders in the Walla Walla Watershed to develop new ways to protect water resources, water quality, and habitat. Ecology staff participated in workgroups and drafting of plans focused on water quality aspects of this effort.

Pollution Identification/Watershed Evaluating

- **Perform Annual Watershed Evaluations:** Surveys will be conducted during the early spring season of 2023 to identify livestock water pollution issues. Work will be focused on the Walla Walla River main stem and various tributaries including Pine Creek, Mud Creek, West Little Walla Walla River, East Little Walla Walla River, Garrison Creek, Cottonwood Creek, Russel Creek, Dry Creek, Spring Creek, Coppei Creek, Touchet River, and Patit Creek.
- **Prioritize Pollution Sites for Assistance**: Sites are evaluated along with all other Snake River and Palouse watershed tributaries to determine new technical and financial letters to be sent out to landowners with water quality pollution issues.

Compliance Activities

- **Contact at Least 5 New Priority Pollution Sites for Assistance:** Approximately five new landowners with livestock water quality issues will be contacted via technical and financial assistance letters. All letters are followed up with multiple phone calls (if contact number is available) throughout the year to ensure BMP plans are developed and implemented.

- **Follow-Up with Landowners of Previous Priority Sites:** Landowners who have received technical assistance letters in previous years and who remain out of compliance will be contacted again through additional phone calls and follow-up technical/financial assistance letters. If landowner has received multiple letters and continued to remain out of compliance, ERO may send a warning letter.
- **Follow up on non-point complaint sites:** Contact valid compliant sites with non-point pollution issues and schedule site visits to provide technical and financial assistance. Phone calls and/or letters will follow with the goal of developing a plan for water quality protection and implementing the plan.

Monitoring Activities

- **Continue Partnering with Kooskooskie Commons to Collect Baseline Water Quality Data.** Kooskooskie Commons will continue water quality monitoring through the FY22 grant. Data collection will occur at sites above and below active riparian restoration areas and on tributary creeks to Yellowhawk Creek (Caldwell, Lasiter, Whitney Spring Creeks and Reser, Russell and Cottonwood Creeks), as well as above and below previous restoration sites on the West Little Walla Walla River. Data collected will include temperature, pH, dissolved oxygen, conductivity and turbidity, and E. coli bacteria.

Priority Watershed Name: Moses Lake

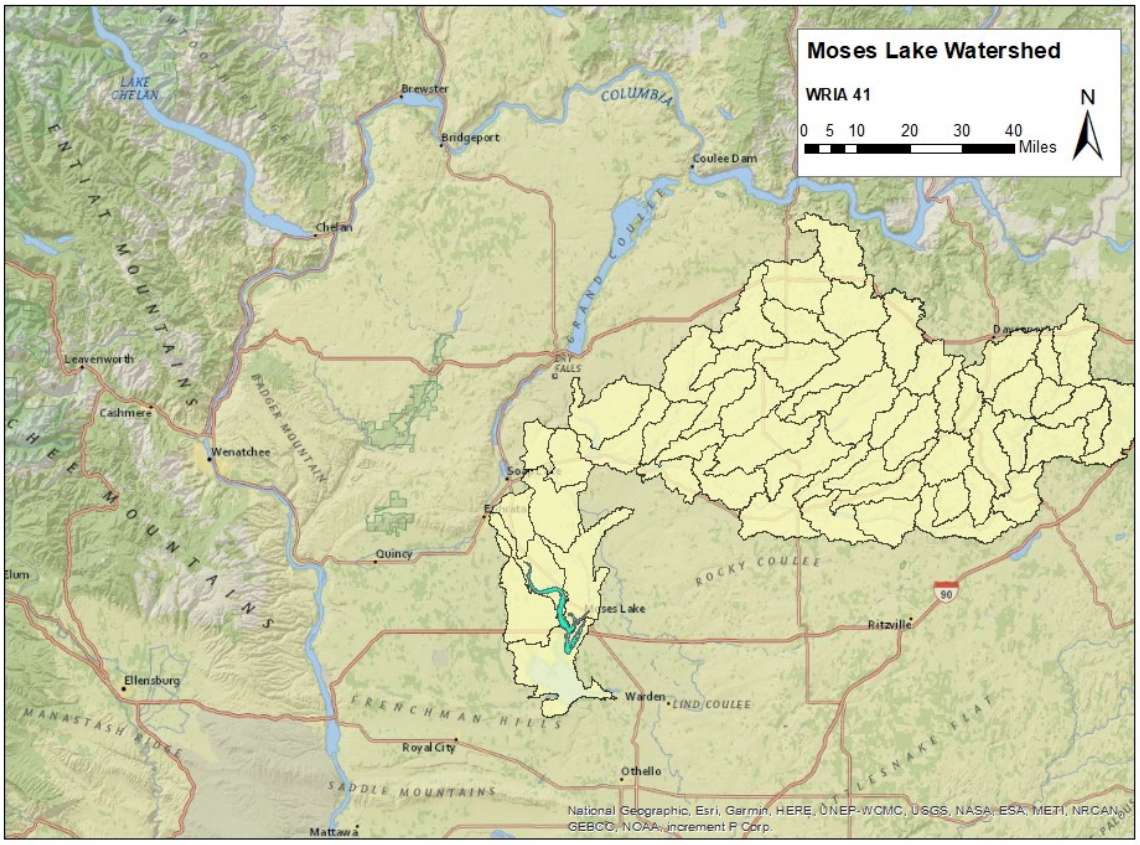

Figure 47. Map of the Moses Lake Watershed

Summary/Context Info:

Ecology is a member of the Moses Lake Watershed Council (MLWC). The Grant County Conservation District (GCCD) leads the collaborative entity, formed in 2018 with the purpose of facilitating locally-led water quality improvements in the Moses Lake Watershed. The MLWC has grown to include a diverse group of local, state, and federal stakeholders, including the Washington State Department of Ecology (Ecology), Moses Lake Irrigation and Rehabilitation District, Grant County Health District, City of Moses Lake, and the U.S. Bureau of Reclamation, along with representation from local tourism, businesses, and concerned citizens.

The MLWC was formed in direct response to persistent harmful algal blooms during summer months that impairs the public's use of Moses Lake and poses a great risk to public health and the health of pets and livestock. The MLWC is building on several decades of efforts studying Moses Lake's poor water quality. Work conducted by the University of Washington and the EPA Clean Lakes Project in the 1980's generated a large body of data and recommendations for improving water quality. However, long-term management plans for the lake and watershed were not developed or implemented. Ecology issued a draft Total Maximum Daily Load (TMDL) plan in 2002, but the TMDL process was suspended in 2004 due to a lack of political and community support. Instead of resuming the TMDL process that failed in 2004, stakeholders,

including state legislators, committed to supporting a collaborative, locally-driven effort to address sources of phosphorus pollution and improving lake water quality.

Priority Actions:

Education and Outreach

- **Implement Public Information and Outreach Plan:** Ecology and partners will continue to implement an Information and Outreach Plan.
- **Provide Shoreline and Water Quality Education**: Through an FY23 grant, CBCD will provide technical assistance to shoreline property owners, construct a shoreline restoration public demonstration project, develop a guide for shoreline homeowners, lead workshops and tours, and distribute newsletters and develop website content. This grant will fund education and outreach through 2025.

Financial Assistance

- **Implement Moses Lake Shoreline Restoration and Nutrient Reduction Project (Ecology FY 23 Water Quality Combined Funding Program):** CBCD received funding through a FY23 Water Quality Combined Funding Cycle grant to address non-point sources of nutrients, especially phosphorus, entering Moses Lake through shoreline land uses and practices. This project will develop and implement a shoreline nutrient assessment for shoreline property owners, develop a public demonstration for the community, conduct education and outreach, and support a second phase of the USGS cooperative groundwater study.
- **Implement assessment of the groundwater recharge sources of phosphorus in Rocky Ford Springs (USGS Cooperative Groundwater Study Phase II):** A portion of the FY23 water quality grant supports a second phase of the USGS Cooperative Groundwater Study to delineate groundwater pathways through which phosphorus is transported to Moses Lake. Additional sampling will occur in 2023.
- **Implement WaterSMART: Cooperative Watershed Management Program Phase I Grant Project:** CBCD, Ecology, and partners will continue work on this project to advance the Moses Lake Watershed Council and develop a watershed management plan for the larger Moses Lake Watershed. Funding is for project implementation over two years starting in 2022.

Partner Coordination

- **Participate in the Moses Lake Watershed Council:** The MLWC meets monthly. Subcommittees meet outside the regular meeting schedule to evaluate emerging technologies, data and monitoring, information and outreach, grants, and legislative activities.

Compliance Activities

- **Respond to Non-Point Complaints:** Ecology will investigate complaints received through the Environmental Reporting System (ERTS) to confirm a pollution source. If confirmed, Ecology will contact landowners by phone and letter. After we send letters offering financial and technical assistance to landowners, the ERO team works to get on-site meetings with producers. These meetings are an opportunity to learn from landowners, identify key BMPs to protect water quality on the site, and discuss potential project plans and designs.
- **Ensure Trout Lodge Agreed Order is Implemented:** Ecology will continue working with Troutlodge Fish Hatchery to implement a 2020 Agreed Order. Troutlodge will continue collecting data under the new nutrient monitoring requirements of the Finfish General Permit and summarize the results by early 2024.

Monitoring Activities

- **Partner on Groundwater Nutrient Monitoring**: Phase II of this project will be supported, in part, by GCCD's FY23 Moses Lake Shoreline Restoration and Nutrient Reduction Project. Ecology, USGS, and the Bureau of Reclamation will partner on additional groundwater sampling.
- **Partner on Freshwater Algae Bloom Monitoring Program:** Ecology will continue to fund the Freshwater Algae Bloom Monitoring Program in partnership with the King County Environmental Laboratory. After confirming reports of algae blooms on Moses Lake, Grant County Health District will collect and submit samples for cyanotoxin testing and use the results to educate the public on safe use of the lake.

CRO Priority Watersheds

Ecology's Central Region Office (CRO) covers seven counties (Okanogan Douglas, Chelan, Kittitas, Yakima Benton, and Klickitat) on the east side of the Cascade mountains spanning from Canada to Oregon. Nonpoint staff frequently coordinate with local partners, including conservation districts, Local Health districts, municipalities, county and state government agencies, and Tribes.

Through attendance at conservation district board meetings, nonpoint staff are able to further develop cooperative relationships with CDs. Because CDs are the trusted local technical assistance resource for landowners needing to make improvements. These relationships consistently prove to be invaluable for implementing water quality improvement BMPs.

Frequent communication with Local Health districts, municipalities, county and state government agencies, and Tribes while following up on identified water quality concerns has benefited the working relationships with Ecology staff that benefits regulatory compliance and environmental protection.

Through in-person site visits, Phone contact and technical assistance letters nonpoint staff provide landowners with information on Water Quality laws and provide referrals to local partners for assistance.

Staff respond to complaints submitted in Ecology's Environmental Report Tracking System (ERTS) and coordinate with local agencies to resolve the issue. CRO is working to increase the coordination with our local partners to identify and address water quality concerns in the central region. Identified nonpoint source pollution sites of concern are recorded in our Nonpoint Inspection (NPI) database and we follow up on the individual complaints through ERTS.

For priority watersheds, action plans for 2023 are highlighted below.

Priority Watershed Name: Lower Yakima River (WRIA 37)

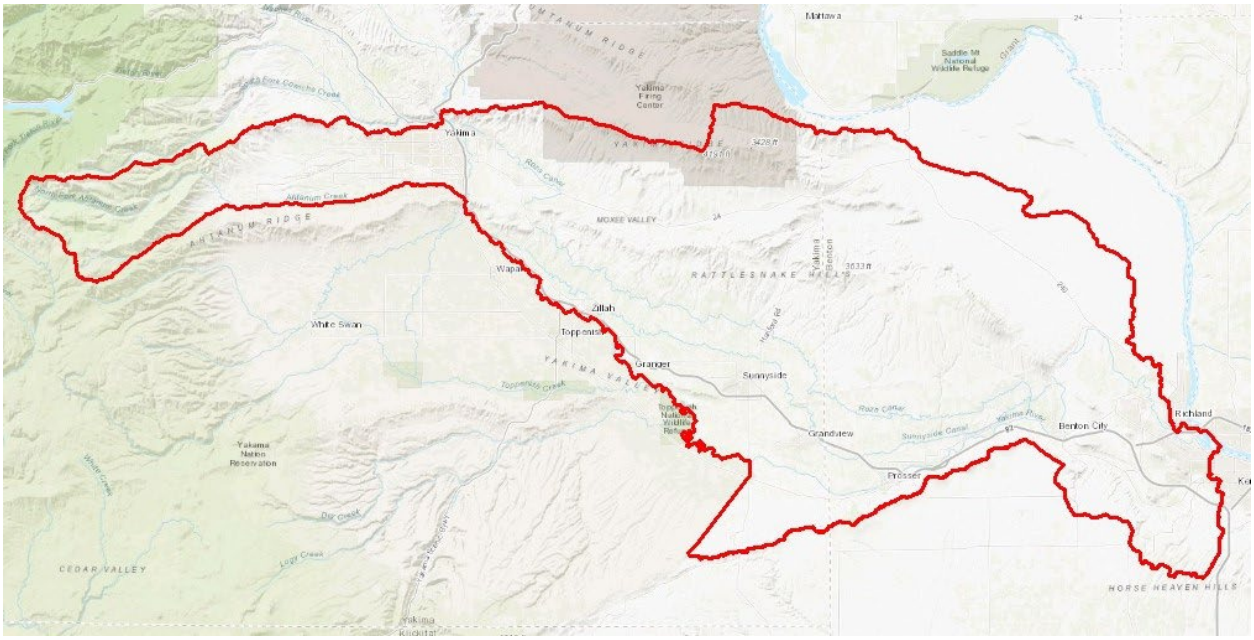

Figure 48. Map of the Lower Yakima River Watershed.

Implementing: Lower Yakima Suspended Sediment TMDL

Summary/Context Info:

The ongoing implementation of the Lower Yakima Suspended Sediment TMDL has greatly improved the water quality discharged to the Lower Yakima River, meeting and maintaining the water quality goals of the TMDL remain as the project goals. The existing strong partnership with Roza and Sunnyside Valley Irrigation Districts is instrumental in the current and future successes seen in this watershed. Ecology WQ staff will continue to coordinate closely with irrigation district staff to identify additional opportunities for additional water quality improvement.

Priority Actions:

Financial Assistance

- Financial assistance opportunities are coordinated through the watershed partners including the conservation districts and grant eligible NGOs.

Partner Coordination

- Communication with the Roza and Sunnyside Valley Irrigation districts will be on an as needed basis and depend on field schedules and pollution reports. Contact is monthly or more frequently as needed.
- Communication with the North Yakima, South Yakima and Benton County conservation districts is monthly or more frequently as needed to address pollution sources.

Pollution Identification/Watershed Evaluating

- Ecology staff visit the Lowey Yakima watershed periodically with an emphasis during the irrigation season and, through field monitoring of turbidity, seek to identify segments that turbidity loading to be addressed through TMDL non-point implementation.
- Coordination with watershed partners, including irrigation districts, conservation districts, and municipalities in the watershed to conducting monitoring and working on identification of turbidity sources.

Compliance Activities

- Initial identification of high turbidity discharges will be shared with the Irrigation Districts to determine if coordinated outreach to land managers can bring the discharge into compliance with TMDL goals through technical assistance.
- Information developed during the field site visits and monitoring will be used to support Ecology's escalation of enforcement as needed.
- Suspended sediment transport is rapid when released to waterways. Field collected data will be relayed rapidly to gain engagement with the responsible landowners and gain water quality improvements in the short term with long term expectations being set forth in documentation.

Monitoring Activities

- Ecology Staff visit the watershed every other week in the irrigation season to conduct visual observations and turbidity sampling with turbidity meter.
- Ecology responds to reports of elevated turbidity from our watershed partners and from the public. These watershed visits will supplement the regular site visits to the watershed.

Priority Watershed Name: White Salmon River (WRIA 29)

Figure 49. Map of the White Salmon River watershed.

Implementing: Straight to Implementation (STI)

Summary/Context Info:

Ecology is working on a water cleanup project for the White Salmon watershed to address identified water quality impairments for bacteria. Stakeholders in the watershed greeted ecology's entrance into the watershed with interest and support. Some of the local water quality interest extends beyond the bacteria pollution problems.

Staffing changes has left this project temporarily without a WQ project lead. This position will be filled in 2023. Sampling and monitoring in the watershed are continuing through the work of the Environmental Assessment Program.

Priority Actions:

Education and Outreach

- Ecology staff will work with the US Forest Service on outreach to the recreational boaters. Ecology staff work with the USFS staff to have water quality information included in the 2023 USFS recreational boating permit (USFS annual recreational boater permit for Wild and Scenic River segment).

- Ecology staff are working with Underwood Conservation District, Mid-Columbia Fisheries, and the Yakama Nation on an educational project for the local school district addressing stream health for stream on school property.

Financial Assistance

- Underwood Conservation District is continuing to apply grant funding from Ecology to implement water quality improvement projects in the White Salmon watershed.

Partner Coordination

- Coordination with USFS, Underwood Conservation District, Yakama Nation, Friends of the White Salmon, Adventure Scientists, Mid-Columbia Fisheries, USGS, Xerces Society and Trout Lake city council.

Pollution Identification/Watershed Evaluating

- Coordinating with CD on Bacterial Sampling, filling in data gaps, while preparing the White Salmon Bacteria cleanup plan.
- Ecology conducts complaint responses as needed and have Monthly field visits to the White Salmon watershed for pollution identification work.

Compliance Activities

- No pollution sources needing compliance follow up have been identified. Future cases needing compliance actions will begin with technical assistance and follow Ecology's policies on escalating enforcement.
- Community reports of water quality concerns will be entered into the ERTS and followed up on by CRO non-point staff.

Monitoring Activities

- The Adventure Scientists volunteer group is conducting monitoring routine monitoring of WQ in the White Salmon. The Adventure Scientists have coordinated with Ecology on development of a Quality Assurance Project Plan.
- Underwood Conservation District is conducting monitoring for bacteria other WQ parameters in the White Salmon Watershed.
- Ecology's Environmental Assessment Program (EAP) is conducting a bacteria loading study in the watershed spanning 2022-2024. This study will reference the current WQ bacteria standard for E. Coli.

Priority Watershed Name: Wilson Creek watershed

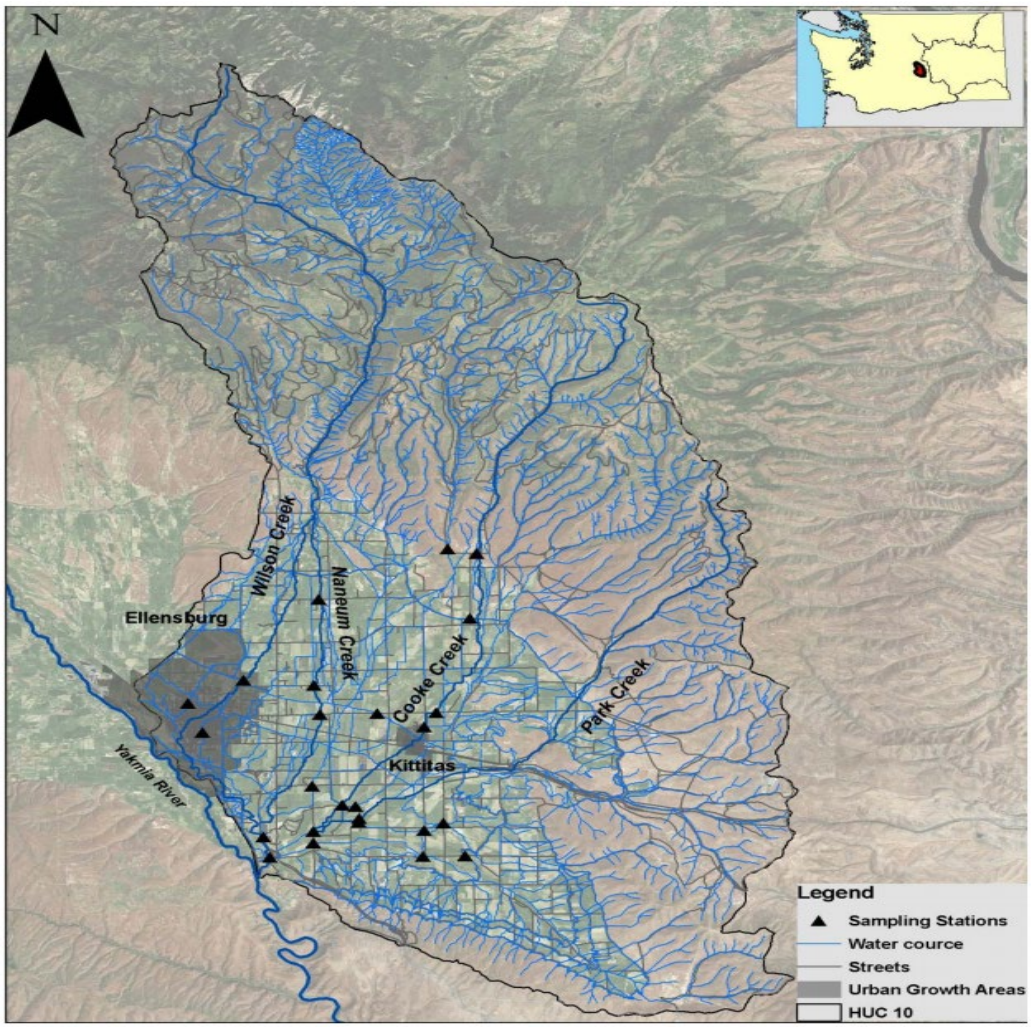

Figure 50. Map of the Wilson Creek Watershed.

Implementing: Upper Yakima Basin Suspended Sediment, Turbidity and Organochlorine Pesticide Total Maximum Daily Load and the Wilson Creek Sub-basin Bacteria Total Maximum Daily Load.

Summary/Context Info:

Improvements to water quality in the Wilson Creek watershed have been significant but have not met the goals set by the TMDL.

Priority Actions:

Education and Outreach

- Outreach to irrigation district(s) (Spring 2022 and quarterly through 2023)

- Outreach to Kittitas County Conservation District (Spring 2023 and quarterly through 2023)

Financial Assistance

- Financial assistance opportunities are coordinated through the watershed partners including the conservation district and grant eligible NGOs.

Partner Coordination

- Communication with the Irrigation water purveyors will be on an as needed basis and depend on field schedules and pollution reports. Contact is monthly or more frequently as needed.
- Communication with the Kittitas County conservation district is monthly or more frequently as needed to address pollution sources.

Pollution Identification/Watershed Evaluating

- Ecology staff visit the watershed during the irrigation season and monitor of Turbidity in the field to isolate the stream segments that are receiving pollution run off.
- Coordination with watershed partners, including irrigation purveyors and the conservation district, in the watershed monitoring and identifying pollution sources, focusing on the summer irrigation season.

Compliance Activities

- Landowners and land managers identified for the stream reaches receiving pollution loading will receive direct in-person outreach and/or mailings to identifying Ecology's WQ concerns and the need to address continuing pollution loading.
- Information developed during the field site visits and monitoring is used to support Ecology's escalation of enforcement as needed.
- Pollution transport is rapid when released to waterways. Field collected data will be relayed rapidly to gain engagement with the responsible landowners and gain water quality improvements in the short term with long term expectations being set forth in documentation.

Monitoring Activities

- Ecology Staff will be visiting the watershed every other week to conduct visual observations and turbidity sampling with turbidity meter.
- Ecology will respond to reports of elevated turbidity from our watershed partners and from the public. These watershed visits will supplement the regular site visits to the watershed.

Priority Watershed Name: Bonaparte Creek

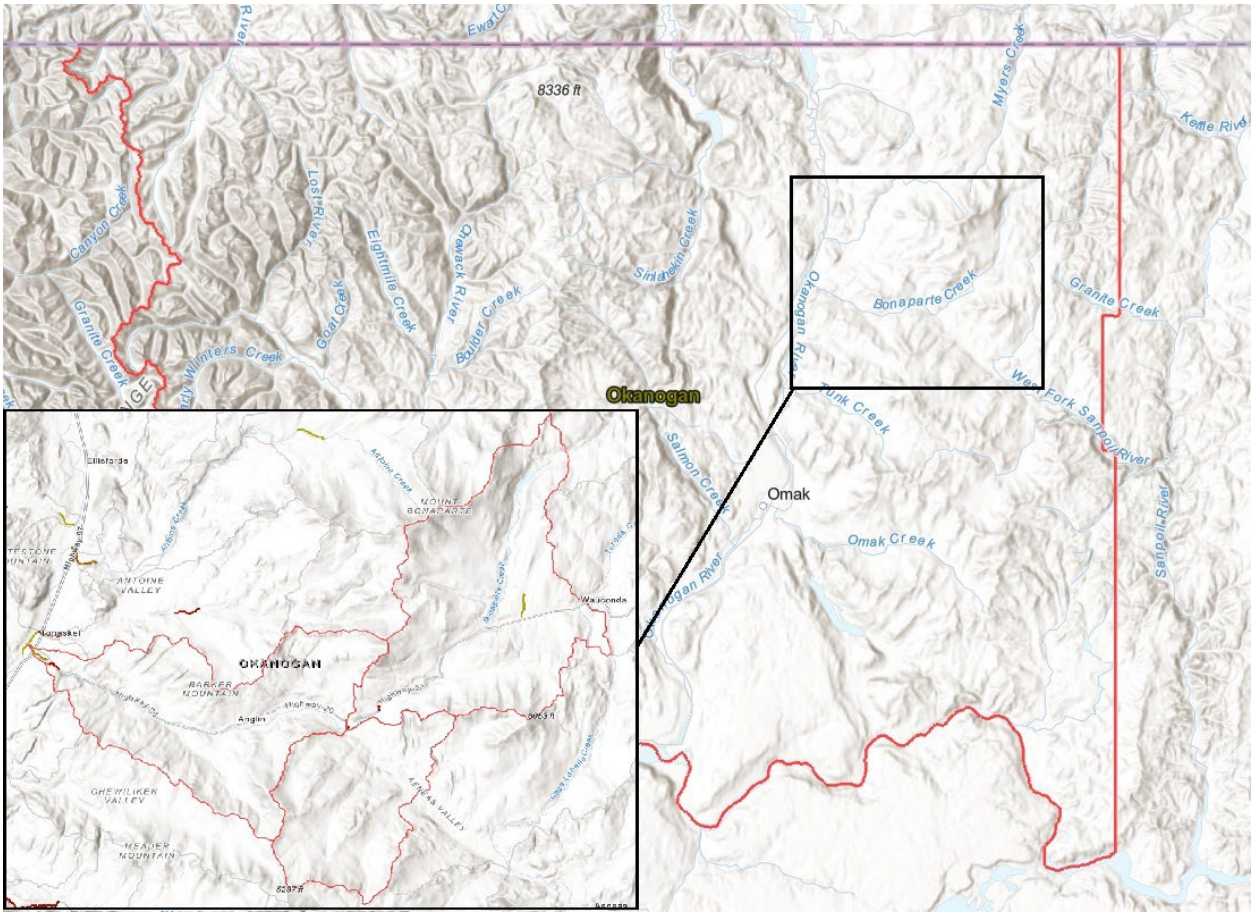

Figure 51. Map of the Bonaparte Creek Watershed, WRIA 49.

Implementing: Watershed improvements to address Bacteria and Temperature water quality impairments

Summary/Context Info:

Bonaparte Creek watershed includes bacteria, pH, and temperature listings. Ecology staff are working with the local stakeholders and initiated a watershed assessment program seeking to identify and address sources of contamination in the watershed.

Priority Actions:

Education and Outreach

- Outreach to conservation District (Spring 2022 and quarterly through 2023)
- Direct outreach will be made to landowners and operators to address identified water quality concerns.

Financial Assistance

- Financial assistance opportunities will be coordinated through the watershed partners including the conservation district and grant eligible NGOs.

Partner Coordination

- Communication with the Okanogan County conservation district is monthly or more frequently as needed to address pollution sources.

Pollution Identification/Watershed Evaluating

- Ecology staff will be visiting the watershed periodically through the year and seek to identify sources of water quality impairment and stream reaches that could be targeted for improvements to protect water quality.
- Coordination with watershed partners, including irrigation purveyors and the conservation district, in the watershed in identifying and monitoring pollution sources.

Compliance Activities

- Landowners and land managers identified for the stream reaches receiving pollution loading will receive direct in-person outreach and/or mailings identifying Ecology's WQ concerns and the need to address continuing pollution loading.
- Information developed during the field site visits and monitoring will be used to support Ecology's escalation of enforcement as needed.

Monitoring Activities

- Ecology Staff will be visiting the watershed periodically to conduct visual observations and conduct turbidity sampling with turbidity meter.
- Ecology will respond to reports of water quality concerns from our watershed partners and from the public. These watershed visits will supplement the regular site visits to the watershed.

NWRO Priority Watersheds

Priority Watershed: Soos Creek Watershed

In Development: Soos Creek Fine Sediment TMDL and Soos Creek Multiparameter TMDL.

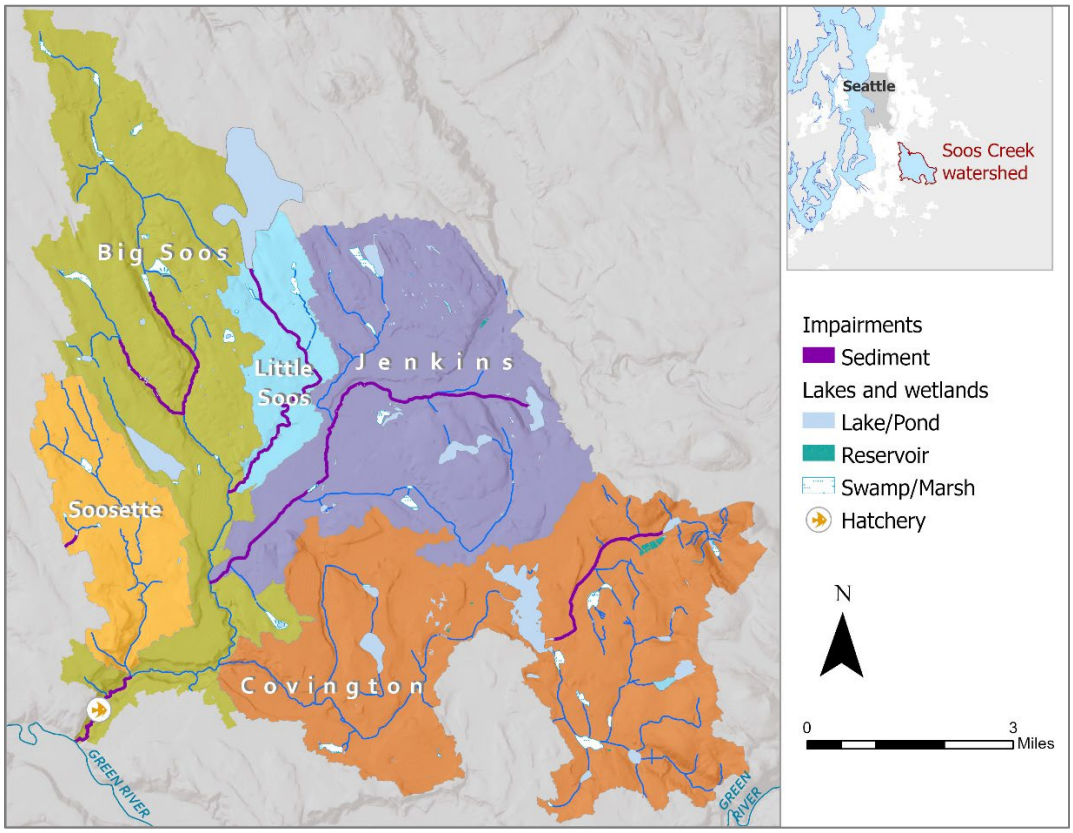

Figure 52. Segments in Soos Creek with Suspended Fine Sediment that impairs Benthic Invertebrate survival.

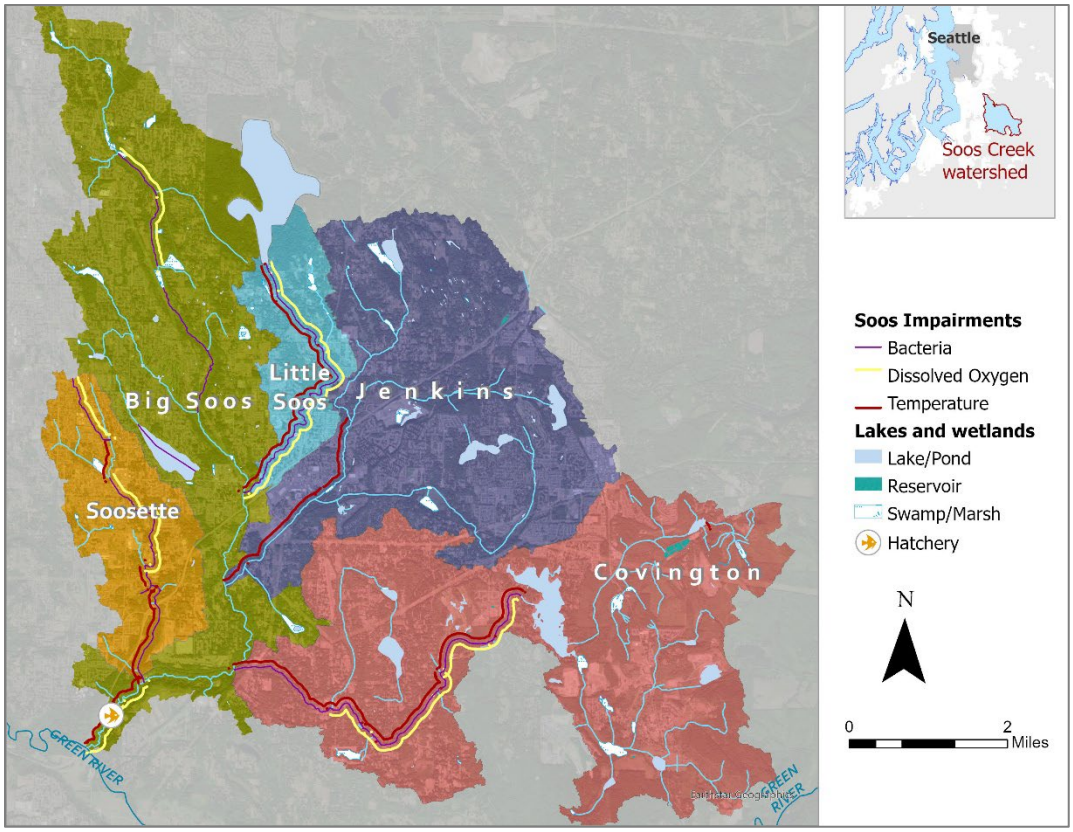

Figure 53. Segments in Soos Creek with Bacteria, Dissolved Oxygen and Temperature Water Quality Impairments.

Summary/Context Info:

Ecology is in the process of developing a fine sediment TMDL in Soos Creek to address impairments to benthic invertebrates, an indicator of stream health. This is the first TMDL of its kind in the state. Fine sediments sourced from upland sources and those produced through instream erosion will have to be controlled to improve stream habitat and meet water quality standards. Ecology will be finalizing the technical work on the TMDL study and hosting implementation-focused meetings with stakeholders, Tribes, and others in order to complete this TMDL and its implementation plan. In addition to efforts to control turbidity, the restoration of degraded habitat by improving riparian buffers and increasing channel complexity will also be part of the accompanying implementation plan.

The second TMDL Ecology is developing in Soos Creek will address temperature and dissolved oxygen impairments that indicate a failure to meet the aquatic life designated use and bacteria impairments that indicate a failure to meet recreational uses. Data collection efforts are underway to support the technical analyses for this project.

Priority Actions:

Partner Coordination

- **Our Green Duwamish:** Attend bimonthly meetings where jurisdictions with municipal stormwater permits, nonprofit organizations, and businesses collaborate on implementing actions aimed at water quality improvements in the Green-Duwamish watershed. Soos Creek is a tributary to the Green River.
- **WRIA 9 Salmon Recovery Group:** Attend monthly meetings of the Implementation Technical Group and quarterly meetings of the WRIA 9 Forum. The group's mission is to restore salmonid habitat in the watershed, with a focus on Chinook and steelhead, two salmon species on the Endangered Species List. Ecology's TMDL Lead serves annually on the group's committee for riparian restoration grant application review.
- **King County basin steward:** Ecology collaborates with King County's basin steward for the Middle Green River to prioritize target areas in Soos Creek for King County's property purchase and habitat restoration programs.

Compliance Activities

- **Evaluate ERTS complaints related to high turbidity:** Reports of turbid water or turbid discharges come into Ecology's Environmental Response Tracking System (ERTS) for follow up by relevant state or local agencies with authority. Depending upon the situation, Ecology's point source or nonpoint source inspectors will investigate and address such discharges as appropriate. As part of our work in the priority Soos Creek watershed, Ecology tracks ERTS complaints related to high turbidity discharges into the surface waters of Soos Creek.

Priority Watershed Name: Lower Skagit Tributaries

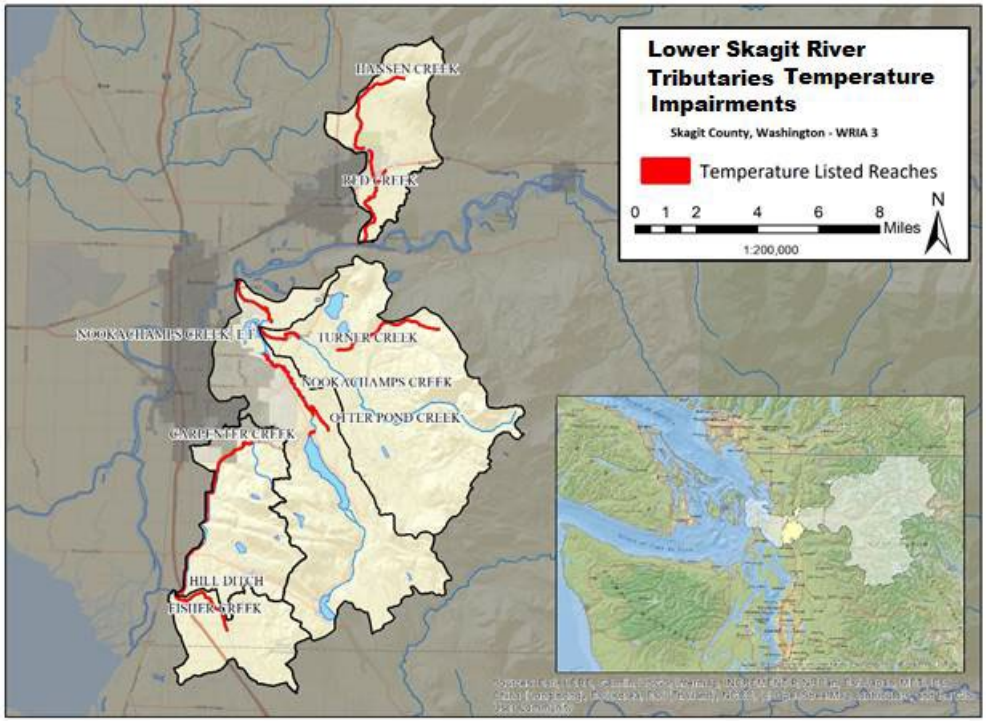

Figure 54. Lower Skagit Tributaries Temperature TMDL area.

Implementing: Lower Skagit Tributaries Temperature TMDL

Summary/Context Info:

Ecology continues to work with local restoration practitioners to develop new region-driven efforts to increase the pace of riparian restoration in the Lower Skagit Tributaries. The activities are a result of the Lower Skagit Tributaries Temperature TMDL Implementation Strategy[33] developed in coordination with stakeholders and implementation partners during 2019.

Priority Actions:

Education and Outreach

- **Update and distribute the Skagit Temperature Story map and Water Temperature Video Series:** Ecology developed an educational interactive website to inform the public about the status of warm water conditions in the Skagit River Tributaries. This story map includes links to resources to take action and is based on preliminary community research about their understanding of the temperature problem in lower Skagit River tributaries. Ecology also developed a series of four videos describing conditions, programs, and solutions to high water temperatures. Story map will continue to be updated regularly.

[33] https://apps.ecology.wa.gov/publications/SummaryPages/2010010.html

- **Develop and update a Resource List/Directory:** Ecology is working with partner organizations to develop a list of informational resources that will provide landowners with links and descriptions of programs and funding opportunities to encourage voluntary riparian restoration.
- **Complete Community Based Social Marketing (CBSM) Research:** Ecology is funding a CBSM research project through the Skagit Conservation District. This effort is conducting the research to scope additional implementation efforts. The social research included focus groups and interviews with individuals to identify barriers and motivators to riparian restoration activities. Participants were selected and nominated from both restoration practitioners and local agricultural organizations. The research findings are being used to investigate the use of incentives, easements, and other programs to increase riparian habitat restoration. The CBSM project deliverables (Summary Social Research report and the CBSM Campaign Plan) are complete and will be made available soon.
- **Direct Landowner Outreach:** Ecology will continue to provide technical support the Upper Skagit Indian Tribe, Drainage District 21, Skagit County, and other riparian landowners to gain permission and access to streamside areas for the East Fork Nookachamps with the goal of the development of the East Fork Nookachamps Watershed Plan. The watershed plan will provide reach scale implementation plans to improve instream conditions and habitat.

Partner Coordination

- **Continue Coordination with Skagit Community Engagement Committee (CEC):** Continue to attend the monthly CEC meetings on general outreach efforts in the Skagit. The Skagit CEC is an existing outreach and education coordination group made up of members from the Skagit Watershed Council (including Ecology TMDL Leads and Non-point staff). All the members share information and educational materials to share about a range of topics, including temperature. This group was instrumental in helping guide the Skagit video series.
- **Hold Quarterly Meetings of the Lower Skagit Temperature Strategy Workgroup:** Continue to interface with key implementation partners and stakeholders on a regular basis.
- **Participate in Skagit Watershed Council Meetings:** Actively participate in technical committee and Council meetings to promote awareness of the Lower Skagit Temperature TMDL, encourage grant applications to Ecology's Combined Funding Program, and prioritize Salmon Recovery Funding Board projects supporting water quality/temperature improvements.
- **Field Partner Outreach:** NWRO will reach out to local tribes to participate in the East Fork Nookachamps Summer 2023 field work to strengthen partnerships and assist in the sequencing of select sub watersheds and future implementation actions.

Compliance Activities

- **Evaluate ERTS Complaints for Riparian Vegetation Removal:** Respond to ERTS complaints for violations of Critical Areas Ordinance violations and follow up on efforts to restore damaged areas. Follow up can include coordination with local code enforcement, our SEA program, the property owner, the local conservation district, and the funding agency if protected buffers were removed.

Priority Watershed Name: South Skagit Bay

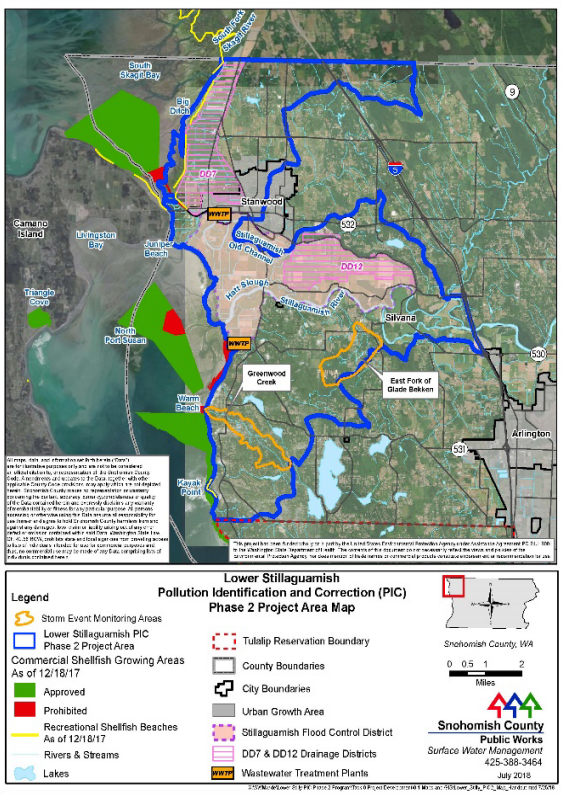

Figure 56. Port Susan/South Skagit Bay Drainage area.

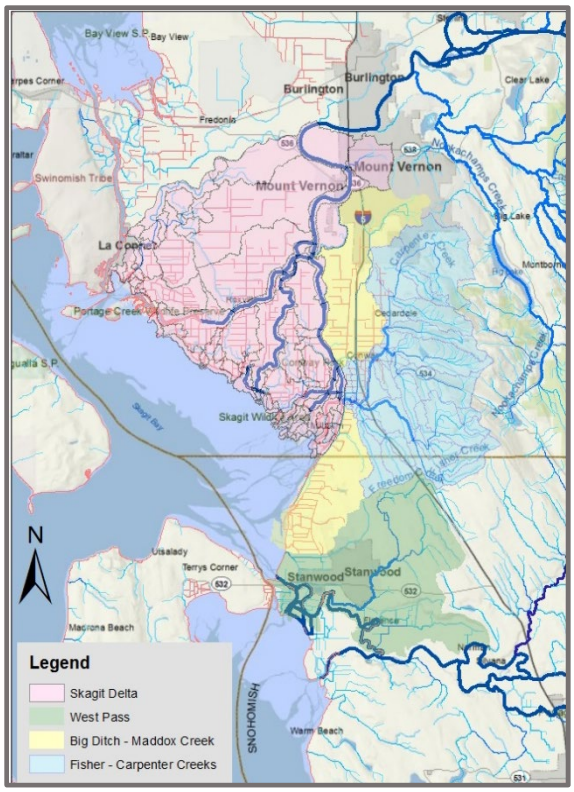

Figure 55. South Skagit Bay Direct Drainage area.

Implementing: South Skagit Bay Watershed Evaluation

Summary/Context Info:

South Skagit Bay (SSB) has actively harvested shellfish areas at risk of closure due to marine fecal coliform levels that hover at the "threatened" level. Ecology's water quality program employees in the Shoreline and Bellingham offices have been collaborating in the Big Ditch/Maddox Creek subbasins (Figure 15) performing routine characterization monitoring, storm event monitoring, source tracing monitoring, and field surveys to identify pollution sources. We are also coordinating with the Stillaguamish Pollution Identification and Correction (PIC) efforts since SSB receives water via the Old Stillaguamish Channel via West Pass.

Priority Actions:

Education and Outreach

- **Update South Skagit Bay Approach**: Ecology will review data collected through this effort so far and develop a written summary of findings. Ecology will also develop a written report of technical assistance and work done to date to accompany data

summary and will provide recommendations to guide future non-point work. Ecology will also update the related interactive map feature and update outdated links when needed.

- **Examine effectiveness of distributing mailers:** Ecology developed and distributed two postcards in the SSB project area in 2022 to increase general awareness of the project, of good land management practices and of resources available to reduce bacterial pollution potential. We will evaluate the effectiveness of sending mailers to property owners in the project area during 2023.

Partner Coordination

- **Participate in Stillaguamish PIC III Interagency meetings:** Ecology has two employees that make up a Snohomish/Stillaguamish Water Cleanup Team and who both participate in meetings of the Stillaguamish PIC III. Ecology will continue to assist the PIC III team on the development of OSS survey techniques.
- **Presentations to Stillaguamish Watershed Council:** Ecology has assisted in several presentations to the watershed council as part of an interagency update about the Stillaguamish PIC III work.
- **Continue to host South Skagit Bay Stakeholder meetings:** Ecology will continue to engage with our South Skagit Bay Stakeholder Group through quarterly meetings. We will conduct at least one meeting with all partners and stakeholders from both Snohomish and Skagit County.
- **Complete effort to collect MST samples:** With the support of EPA staff from Manchester Lab, the South Skagit Bay project began collecting MST samples in the Summer of 2022. Samples included reference samples for MST markers, ambient MST samples, and Storm MST samples. The MST sample effort will be completed by the spring of 2023 and Ecology will review MST results with stakeholder groups to identify trends and action items.

Pollution Identification/Watershed Evaluating

- **Windshield surveys**: Ecology conducts surveys to visually assess conditions that are known to, or are likely to, discharge bacteria to surface waters. Our technical assistance and enforcement actions will most often address livestock with direct surface water access, degraded riparian conditions, and manure co-mingling with rainwater run-off and in saturated fields before discharge to surface water conveyances.

Compliance/Technical Assistance Activities

- **Prioritize ERTS Complaints relating to bacterial pollution:** In response to reports to ERTS, Ecology will continue to respond directly or coordinate with WSDA and Snohomish County compliance staff addressing livestock or OSS related bacterial pollution sources.
- **Coordinate a response with local conservation districts:** Ecology will continue to partner with Skagit and Snohomish Conservation Districts to make contact with properties and provide technical assistance to priority landowners.

Monitoring

- **Continue Monitoring in SSB Direct Drainages:** Ecology will continue ambient and storm event monitoring in several areas in early 2023. We will review the water sampling data collected so far and develop a short report on our findings and the work done to date (primarily through technical assistance). We will then determine if sampling should be reduced, discontinued, or changed.

Priority Watershed Name: Snohomish River Basin

Figure 57. WRIA7, Snohomish Basin.

Implementing: Pilchuck River Temperature/DO TMDL, Snoqualmie River Temperature/DO/Fecal Coliform TMDLs, Snohomish River Tributaries Fecal Coliform TMDL, and an old Snohomish River Estuary TMDL (for DO).

Summary/Context Info:

Ecology identified reduced baseflows in the Pilchuck River watershed as a key contributing factor to higher water temperatures and reduced dissolved oxygen levels during the summer dry season. There is interest in the local salmon recovery community to introduce and manage beavers to improve summer baseflows in both upland and lowland locations, but funding and policy restraints with Beaver introduction have prevented much movement with this effort.

Our focus in 2023 will be to look for opportunities in this watershed to explore multi-benefit projects that our partners could implement that will address nutrient loading to the watershed.

Priority Actions:

Education and Outreach

- **Attend Statewide Beaver Workgroups:** Ecology will attend the statewide workgroup meetings, which are currently hosted by the Tulalip Tribe. It is important for attendees to understand the importance of increasing and maintaining baseflows to achieve important water quality benefits.
- **Outreach to Snohomish County:** To better characterize and plan for the anticipated benefits of strategic stormwater retrofitting to improve baseflows, Ecology will reach out

to Snohomish County Surface Water Management. Our plan is to encourage them to apply for Ecology Stormwater Financial Assistance Funds and possibly Ecology Water Resources Streamflow Restoration Grant funds to study the feasibility of strategic stormwater retrofitting in coordination with local cities (Granite Falls, Snohomish, Lake Stevens).

- **Outreach to the Snoqualmie Valley Water Improvement District (WID):** Previous work several years ago with the WID resulted in a managed drain tile pilot project. Resource constraints prevented Ecology from continuing work with the WID on that project. During summer 2023 we will re-engage with the WID to explore the successes and challenges experienced as part of their pilot work.

Partner Coordination

- **Review Snoqualmie Agricultural Strategic Plan:** Produced as part of King County's Fish/Farm/Flood (FFF) 2.0 efforts, we expect King County to release the first draft of this plan for review and comment in 2023. Ecology's Water Quality Program staff will review this document with respect to future drainage projects with the FFF Fish Caucus and NWRO Regional Director Tom Buroker, who is the Ecology representative on the FFF Implementation Oversight Committee.
- **Improve Coordination with Key Implementation Partners:** Previous interest by the Tulalip Tribe and early TMDL implementation outreach to the Snohomish Conservation District on the value of beaver reintroductions has already yielded two pilot efforts, one focused on work in the Pilchuck uplands and the other the Pilchuck lowlands. Both projects are funded through the Streamflow Restoration Grants managed by Ecology's Water Resources Program. We will engage with both partners to learn from these projects and evaluate them for possible future work funded by Ecology's Combined Funding Program, Salmon Recovery Funding Board, or Floodplains by Design. Where this work can provide water quality benefits, we will be encouraging the export of this technique to other watersheds.
- **Increase Coordination with Ongoing Beaver Reintroduction Efforts:** Both the Tulalip Tribes and the Snohomish Conservation District have Watershed Restoration and Enhancement grants to reintroduce beaver into the lower and upper Pilchuck River. We will reach out directly to those project leads to learn more about their progress and attempt to grow their programs where useful and feasible.

Priority Watershed: Padilla Bay Freshwater Tributaries Bacteria TMDL

The Padilla Bay Freshwater Tributaries Bacteria TMDL was published and approved by EPA at the end of 2020. Based on the results of the TMDL, as well as Skagit County monitoring results, the Skagit County PIC program efforts have expanded into the Padilla Bay tributaries watersheds.

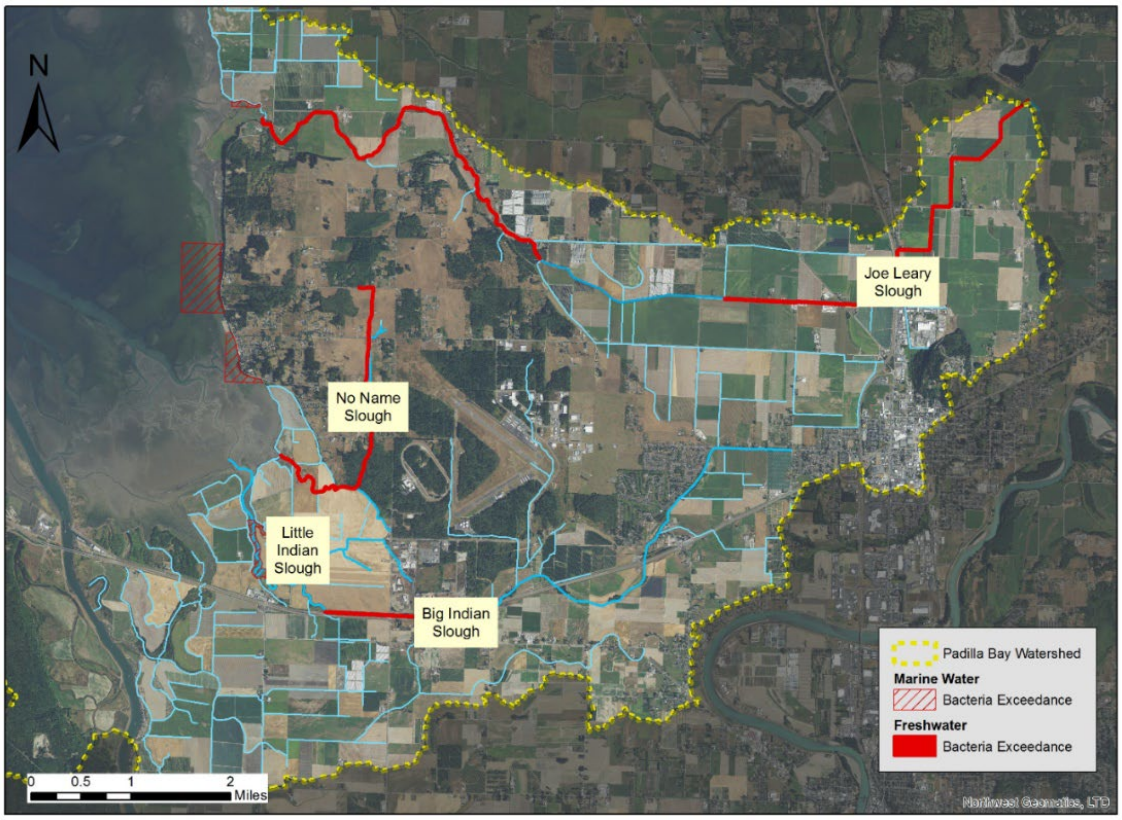

Figure 58. Map of Bacteria listed waters in the Padilla Bay watershed.

Priority Actions:

Partner Coordination

- **Continue Coordination with Implementation Partners:** Ecology staff will continue to participate in the monthly PIC meetings, as well as provide quarterly updates to the Clean Samish Initiative (CSI) executive committee and participating in the CSI Project Development Team to coordinate landowner outreach and technical assistance when sources of pollution are identified in Padilla Bay.
- **Respond to ERTS Complaints relating to bacterial pollution:** Continue to respond directly and/or coordinate with WSDA and Skagit County compliance staff addressing land use actions and activities that are likely to contribute bacterial pollution sources to surface waters.

Compliance/Technical Assistance Activities

- **Site Inspections and Data Collection:** Ecology conducted water quality monitoring for source tracing purposes in the Little Indian slough portion of the Padilla Bay watershed. The data collection area is focused on the commercial/industrial area located at the headwaters of the slough where high concentrations have been documented during the development of the TMDL. Ecology is conducting compliance assurance activities at the facilities conditionally authorized to discharge stormwater and wastewater under NPDES permits in this area.

Bellingham Field Office (BFO) Priority Watersheds

Lower Nooksack River

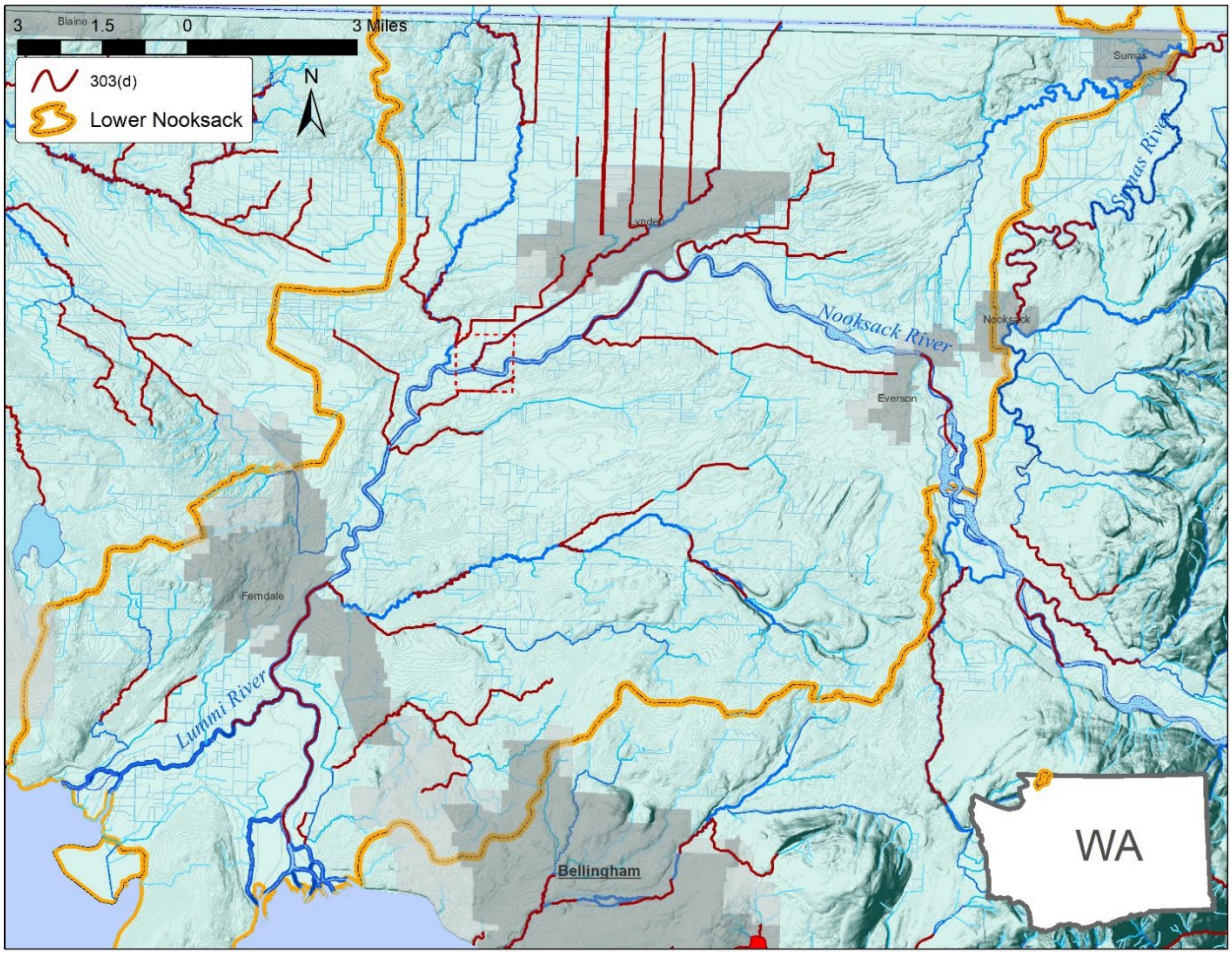

Figure 59. Map of Lower Nooksack River watershed and study area.

Implementing: Lower Nooksack River Fecal Coliform TMDL

Summary/Context Info:

The Nooksack River bacteria TMDL study and implementation plan was completed in 2000. Nonpoint source land use dominates the lower Nooksack River watershed, where most of land is privately held, and is intensively used for agricultural purposes. Dairy farms are abundant along with some poultry farms. Whatcom County also is a top producer of raspberries and is western Washington's leading harvester of forage crops. Manure application is common practice. Municipalities include Lynden, Ferndale, Everson, and Nooksack. The lower 33 mi^2 near the mouth is Lummi Nation land, while the basin at large includes usual and accustomed areas rights under the Treaty of Point Elliot. The Nooksack drains to Bellingham Bay, which includes the shellfish resource area Portage Bay. Protection of downstream shellfish beds is considered one of the most restrictive characteristic uses of the Nooksack because fecal coliform criteria for marine water is much more restrictive than for freshwater. Bacteria

reductions are necessary along the mainstem and tributaries to attain the TMDL that is protective of shellfish harvesting.

For over two decades, implementation of the TMDL has been underway through a variety of programs. Water quality in the shellfish beds improved over time, however, have recently been in decline which resulted in seasonal closures in portions of Portage Bay from September 1 through December 31. These conditionally approved areas comprise 801 acres, while 518 remain open year-round and 223 are restricted along the southwestern shoreline of the Lummi Peninsula. The all involved parties is to improve water quality through collaboration, which includes the identification and control of pollutions sources.

In efforts to keep shellfish harvesting open year-round project partners continue the difficult task of PIC. One new approach involves the Salish Sea Model coupled with a fecal bacteria module (SSM-fb). The SSM-fb will illustrate the fate and transport of bacteria to Bellingham and Portage Bay from upland sources. The study will assist project participants in identifying and addressing problematic areas that have the greatest influence on water quality in the bay.

Priority Actions:

Whatcom Clean Water Program

- **Whatcom Clean Water Program (WCWP):** Although actions promulgated by the Lower Nooksack River Fecal Coliform (FC) TMDL have led to water quality improvements in the Lower Nooksack basin, continued efforts to reduce FC pollution is critical. Ecology staff cooperate with state and local agencies in the Whatcom Clean Water Program (WCWP), funded in part by four EPA National Estuary Program Grants, to address FC pollution from dairies, non-dairy livestock operations, On-Site Septic (OSS) systems and other sources. This partnership is the primary source for shared water quality monitoring information, and for coordinated pollution control activities from state and local stakeholders. In October 2020 Ecology was awarded an NEP grant project focused on reducing FC bacteria discharges from non-dairy livestock operators in the lower Nooksack River watershed, continuing our important role in the WCWP through Summer 2023.
- The receiving marine waters of Portage Bay includes critical shellfish growing areas for the Lummi Nation, but recurring high levels of FC caused a seasonal closure classification downgrade to of portions of the growing area. PIC partners and the WCWP continue to sample and identify sources of bacteria pollution. Tackling these nonpoint pollution sources remains the greatest challenge.

Education and Outreach

Under our existing NEP-funded Shellfish project, BFO's two Nonpoint Shellfish Specialists will continue working with non-dairy livestock operators to reduce discharges of fecal coliform into shellfish growing areas in Whatcom and Skagit counties, likely through August 2023. Under that NEP project Scope of Work, BFO Staff will:

- Ecology Staff will participate in four meetings (one per quarter) or other activities of the Portage Bay Shellfish Advisory Committee.
- BFO Staff will send outreach letters to leaders of local agricultural organizations when issuing informal and formal enforcement actions to operators in the lower Nooksack watershed. The purpose is to increase awareness of our compliance work, build trust and develop cooperative relationships. In selected cases local ag. leaders may contact operators facing compliance actions for observed or potential discharge violations and offer peer to peer support and assistance in addressing their high-risk behaviors.
- BFO Nonpoint Staff will initiate and participate in outreach events and educational activities (spring and summer 2023 events.
- BFO Nonpoint Staff will work with partners on developing regional and local messaging for outreach materials in the hopes of having more uniform messaging.
- BFO Nonpoint Staff will work with partners to send joint educational mailers to non-dairy livestock operators with fall and/or spring messaging in 2023.
- BFO's Whatcom County Nonpoint Specialist will collaborate with WCWP partners to develop and implement a lower Nooksack pollution prevention strategy. BFO Staff will reach out to operators with letters to inform and educate or offer technical assistance (TA), and to remind them of their statutory responsibilities to prevent discharges of livestock manure in runoff to state waters. This fall TA letter will be following up on a joint PIC letter that comes from all partners, historically, sending these letters back-to-back has yielded a higher response rate. Included with each fall TA letter from Ecology is a print-out from the Whatcom CD encouraging reaching them to reach out for technical and financial assistance.

Financial Assistance

- As a potential pilot project, seek one operator/properties that qualifies for 319 Direct Implementation Funds for BMPs that prevent discharges of manure.
- Encourage landowners and operators to seek local funding, each technical letter sent will highlight the Whatcom CD's farm planning services and small grants. Along with the letter from Ecology, there will also be a print out from the Whatcom CD reiterating these programs.
- Ecology has been approved for a Shellfish Strategic Initiative Sub-Award, for the purpose of increasing harvestable shellfish acres in Puget Sound. The project is funded through EPA's National Estuary (NEP) funding. The sub-award will fund two Nonpoint Shellfish Specialists, continuing and enhancing our work to reduce fecal coliform bacteria pollution, in collaboration with our Whatcom Clean Water Program and Clean Samish Initiative partners for about two years (2023-2025).

Pollution Identification/Watershed Assessments

- **Watershed Assessments:** BFO Staff will conduct at least two watershed assessments between January 1 and December 31, 2023, to identify high priority sites for possible compliance action. Results will be shared with partners.

- **Complaints and Referrals:** BFO staff will receive cases through watershed assessments, complaints by citizens, or through referrals from our partners. We expect to receive six to ten new cases during the winter rainy seasons, and two to four more during the dry season.
- **Follow-up from previous years:** BFO Staff will likely need to re-engage from two to five livestock operators from previous winter, starting next fall. Will also send a reminder post-card or some other contact next fall (likely joint letter followed by a fall TA letter that is tailored for each landowner/operator), reminding them to take action to avoid discharge violations, and follow up on those contacts as needed.
- **Enforcement:** Although Ecology does not establish targets for enforcement actions, we likely send five to ten warning letters and one to four formal enforcement actions during 2023 in the lower Nooksack basin. (Notices of Violation, Immediate/Administrative Orders and Notices of Penalty).

Lower Nooksack Monitoring Activities

- BFO field staff will monitor fecal coliform concentrations to identify streams or reaches that have high FC concentrations, and will collect samples from streams, ditches, and runoff from specific properties to identify sources of manure-contaminated runoff.
- BFO Staff will collect and analyze for FC about 120 water samples in the lower Nooksack watershed during the next year.
- BFO staff help to plan and coordinate larger sampling efforts with partner agencies to capture fecal bacteria levels after storm events.
- During semimonthly meetings with Whatcom Clean Water Program (WCWP) members, project partners coordinate to identify areas with elevated bacteria levels and follow up pollution control. Water quality data collected in partnership are available through an interactive online map administered by the Whatcom County Conservation District. Sampling efforts incorporate ambient and targeted events (storm events and source ID), and experimental studies. Recent analysis relating *E. coli* to fecal coliform is underway while continuing to assess bacterial loading to Portage Bay along with tributaries to the main stem.

Drayton Harbor Tributaries

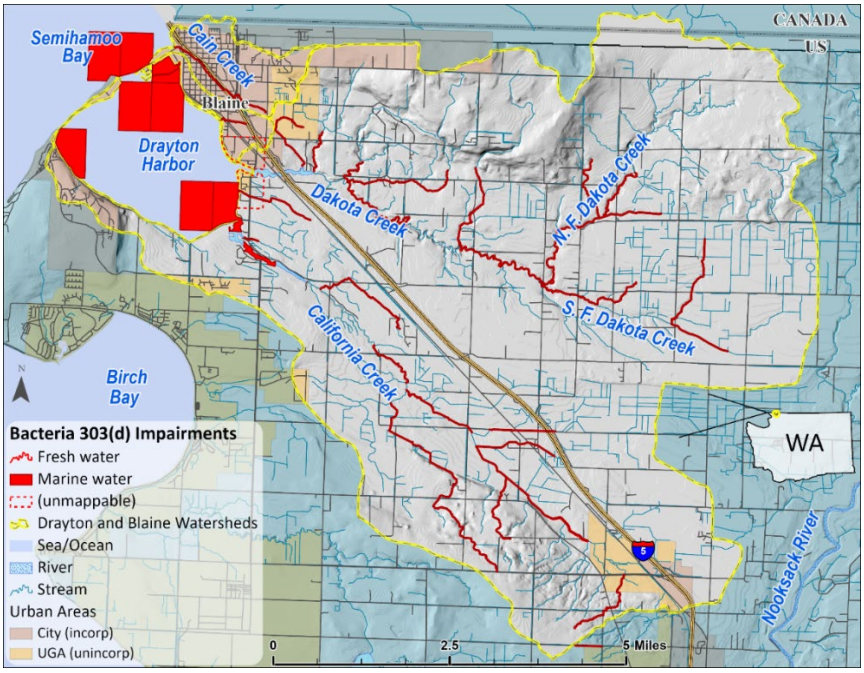

Figure 60. Map of Drayton Harbor watershed and 303(d) listed bacteria impairments.

Updating/Implementing: Drayton Harbor proposed bacteria TMDL

Summary/Context Info:

In 1988, Washington Department of Health (DOH) began closing the shellfish growing areas in Drayton Harbor based on a trend of deteriorating water quality. The closures ultimately resulted in the entire harbor being closed for harvest by 1999. In 2004, DOH upgraded the status of 575 acres in the central harbor from Prohibited to Conditionally Approved. The Conditionally Approved classification for shellfish harvest is based on the amount of rainfall, where, if three quarters of an inch or more of rain falls in a 24-hour period, then shellfish harvesting is closed for six days. Two additional upgrades to Approved for commercial harvest occurred in 2016 and 2019 for a total of 1,575 acres. In 2016, 810 acres of shellfish beds were upgraded followed by the most recent in 2019, which comprised an additional 765 acres. The work of project partners proves the efficacy of pollution control actions; however, freshwater tributaries (primarily Dakota and California creeks) currently do not meet contact recreation criteria (Figure 21).

The annual shellfish growing area review for 2021 reclassified 695 acres from Approved to Conditionally Approved. This new Conditionally Approved area is closed annually from November 1 through January 31. An additional 450 acres were changed from unclassified to Prohibited due to poor water quality. In 2022, 42 acres were downgraded from approved to conditionally approved.

In 2020, Ecology began collaborating with stakeholders to complete the TMDL Implementation Plan. The TMDL is on EPA's WQ-27 priority list, which was recently reclassified as a bridge-metric to be completed by September 2024. Updates to the 2008 TMDL technical study — Phase I (unpublished) is requested by project partners to reflect contemporary data and water quality standards. The TMDL updates have proven to be an involved and thorough task. Ecology's current nonpoint staff efforts to reduce FC pollution Drayton Harbor tributaries is funded through the same NEP grant project employed in the lower Nooksack basin.

Partner Coordination

- **Whatcom Clean Water Program (WCWP):** As with the Lower Nooksack basin, WCWP partners coordinate to identify areas with elevated bacteria levels and follow up pollution control. Water quality data collected in partnership are available through an interactive online map administered by the Whatcom Conservation District (WCD). Sampling efforts incorporate ambient and targeted events, and experimental studies. BFO's TMDL Coordinator evaluated the existing Drayton Harbor FC TMDL, and, with input from WCWP partners and others decided to update the plan. Recent analysis relating *E. coli* to fecal coliform is underway, and the TMDL report analysis shall be updated using the long-term data, which includes:
    - Detail effective and continued water quality improvement actions,
    - Establish TMDLs based on water years 2020 and 2021,
    - Identify trends water quality trends,
    - Identify segments and statement of problem causing the impairment,
    - Identify funding sources,
    - Describe pollution controls and how they will achieve water quality standards,
    - Estimate the time when water quality standards will be met,
    - Schedule the continued implementation of pollution controls,
    - Endorse continued monitoring to track effectiveness of pollution controls; and
    - Commit to revise pollution controls, as necessary.

Priority Actions:

Education and Outreach

- Project partners developed a shared public information campaign to address a variety of topics including, OSS, farm planning, and pet waste. Through collective outreach planning, the pollution prevention and water quality preservation campaign targets seasonally-related issues.

Financial Assistance

- **General Sources:** Actions are currently funded through local and state government, some of which rely on federal programs such as NEP.

- By completing the Drayton Harbor TMDL might improve eligibility or competitiveness for grant funding aimed at implementing measure that would reduce fecal coliform and improve stream habitat.

Partner Coordination

- **Quarterly meetings with shellfish advisory committees:** BFO TMDL and Nonpoint staff will participate in Drayton Harbor Shellfish Protection District meeting and events will meet with the WCWP partnership. Project partners engage local landowners to identify and prevent bacterial pollution.
- **WCWP Field staff and Data Team meetings** occur twice a month.
- **TMDL updates** occur on an as need basis approximately 3 to 4 times per year.

Pollution Identification/Watershed Evaluating

- We will conduct two Watershed Assessments during the reporting period, primarily in areas where livestock operations are numerous, during the fall and winter.
- We will conduct source identification surveys and site visits during the fall and winter 2022-2023, primarily during wet periods with water is running off field and intermittent streams and ditches.

Compliance Activities

- **Watershed Assessments:** BFO Staff will conduct at least 1 watershed assessment in 2023 to identify high priority sites for possible compliance action. Results will be shared with partners.
- **Complaints and Referrals:** BFO staff receive cases through complaints by citizens, or through referrals from our partners.
- **Follow-up from previous years:** As part of the WCWP fall strategy, BFO Staff typically contact from five to ten non-dairy livestock operators in the Drayton Harbor watersheds from the previous winter, reminding them to take action to avoid discharge violations, and follow up on those contacts as needed.
- **Enforcement:** Although Ecology does not establish targets for enforcement actions, in DH tributaries we typically send two to four warning letters and one or two formal enforcement actions per year to operators Drayton watersheds. (Notices of Violation, Immediate/Administrative Orders and Notices of Penalty).

Monitoring Activities

- BFO field staff will monitor fecal coliform concentrations instreams or reaches collecting samples for analysis from streams, ditches, and runoff from specific properties to identify sources of manure-contaminated runoff.
- BFO Staff will collect and analyze for FC about 60 samples from the Drayton Harbor tributaries over the next year.

Samish River and Samish Bay Clean Samish Initiative (CSI):

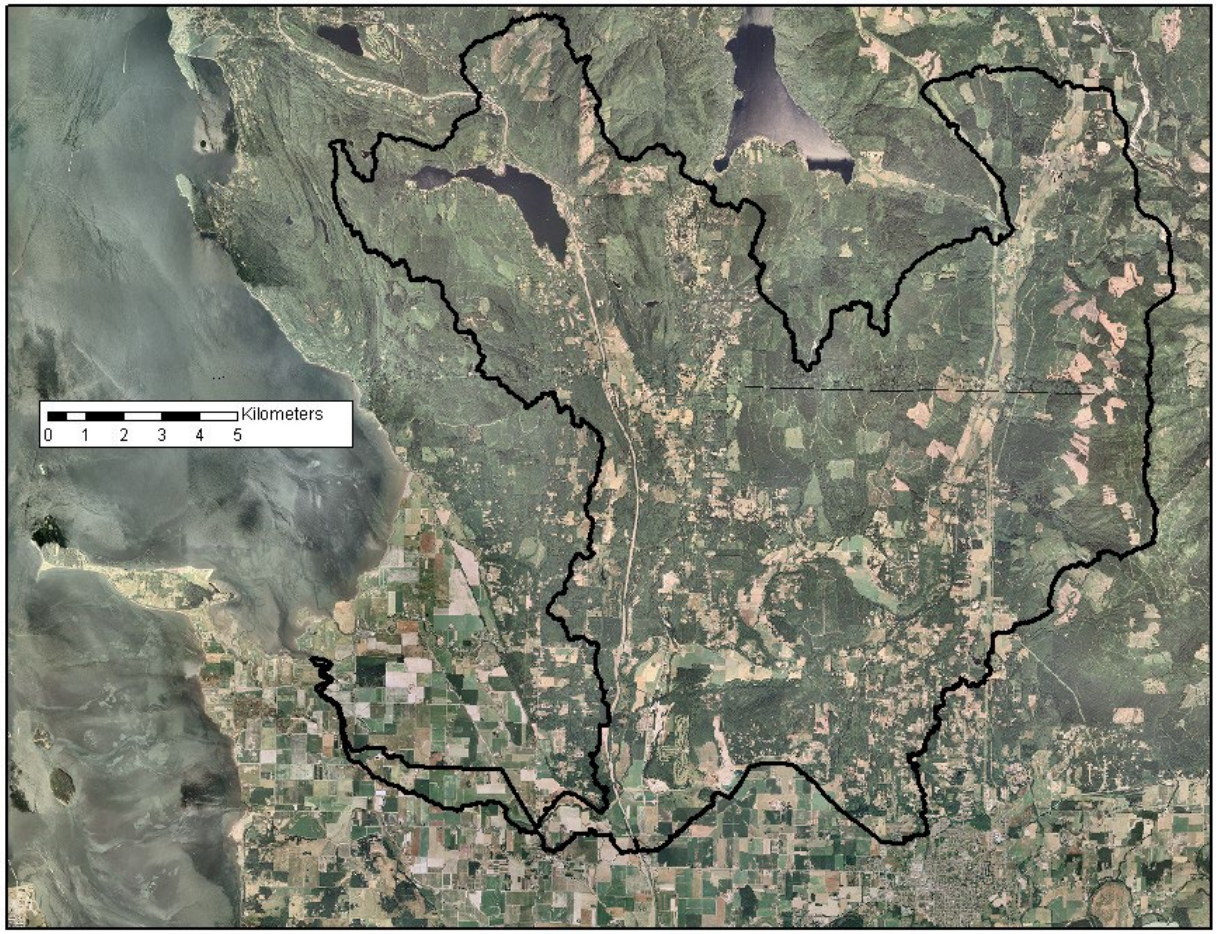

Figure 61. Map of Samish Watershed.

Implementing the TMDL: Samish River Fecal Coliform TMDL – 2009

Summary/Context Info:

The Samish River is the main tributary to Samish Bay. Samish Bay supports several of the largest and most productive shellfish growing areas in north Puget Sound, including several commercial growers of oysters and clams that depend upon clean water for their livelihoods.

The Samish River FC TMDL was published in 2009 because the Samish River and its tributaries were discharging too much fecal coliform bacteria to meet state water quality standards. Bacterial pollution degrades the marine waters of Samish Bay and limits the area open for safe commercial shellfish harvest and recreational uses. The Clean Samish Initiative (CSI) was formed in 2010, and in 2012 Skagit County received NEP funding to form a PIC program in cooperation with local and state partners.

After ten years of focused work CSI reduced the number of pollution closures in Samish Bay from a high of 19 events in 2012 to 8 closures during 2022 (Figure 23). Since 2016 CSI has

succeeded in yielding an average of 6.4 sampling events a year which triggered the 4.7e12/24hr automatic closure of Samish Bay to commercial harvest. With similar effort, it has been difficult to get to zero closures, as the most obvious and egregious examples of poor livestock and manure management have been identified and addressed. The situation with OSS compliance has evolved on a similar course. To date 4,037 acres of shellfish growing area in Samish bay remain conditionally open, following their 2011 downgrading. The opening or partial opening of these acres remains one of the primary goals of the CSI program and its partners. However, in addition to upstream challenges, an added barrier to the opening of these shellfish beds has been the inability to implement the mandated sampling protocol where river and bay samples are both collected within an hour of peak flow during storm events. Such peaks can occur at late hours or during weekends when labs are closed, and often during low tides when marine sample sites are high and dry and are otherwise inaccessible to sampling. Continued coordination and cooperation between all partners, producers, and residents of the Samish Bay watershed is needed for long-term water quality goals to be realized.

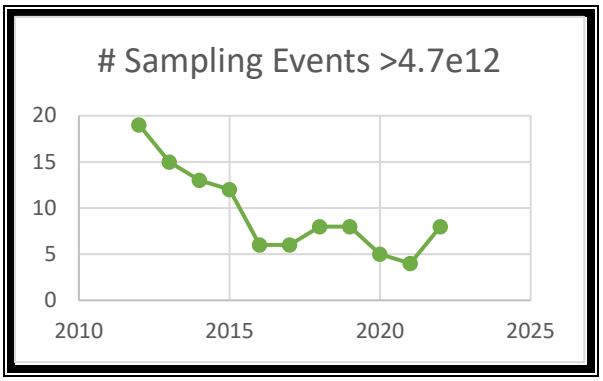

Figure 62. Bacteria Sampling Data for Samish Bay

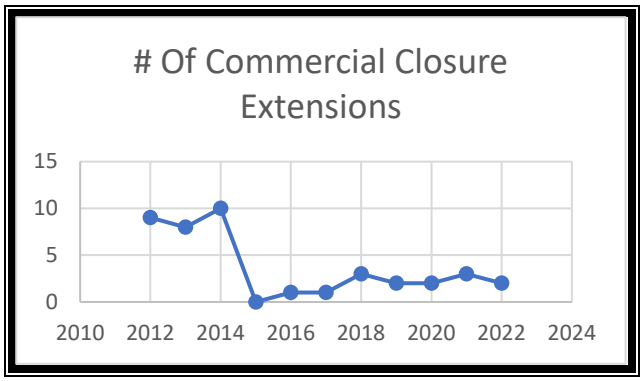

Figure 63. Number of pollution closures in Samish Bay & Commercial Closure Extensions (2012-2022).

Priority Actions:

Education and Outreach

- BFO Nonpoint Staff will initiate and participate in two outreach events and educational activities (summer and fall 2023), in cooperation with CSI partners.

- BFO Staff will continue to send outreach letters to leaders of local agricultural organizations when issuing informal and formal enforcement actions to operators in the Samish Bay watershed. The purpose is to increase awareness of our compliance work, build trust and develop cooperative relationships.
- Ecology staff will participate in four CSE Executive Committee meetings per year, where we discuss water quality trends, set overall priorities, review important cases, and set funding goals.

Financial Assistance

- In Skagit County financial assistance for livestock operators in the Samish basin comes primarily from the Skagit Conservation District (SCD). When BFO Nonpoint Compliance staff discuss discharge violations with landowners, we typically offer them the option of contacting SCD for technical and financial assistance with funds from the Washington State Conservation Commission and Natural Resources Conservation Service (NRCS). We will be working to provide additional options for landowners with funding for BMPs through Ecologies Detailed Implementation Fund (DIF) or other Ecology programs, such as 319 and Centennial grants.

Partner Coordination

- As with the WCWP, BFO Nonpoint Staff collaborates with CSI local, state, and federal partners to address FC pollution from dairies, non-dairy livestock, OSS Systems, and wildlife. We will continue to engage non-dairy livestock operators that are discharging or at high risk of a discharge, through technical assistance, referrals to partners, warnings, or formal compliance actions.

Pollution Identification/Watershed Evaluating

- **Watershed Assessments:** BFO Staff will conduct one to two watershed assessments in the Samish watershed between October 1, 2023, and March 31, 2024 to identify high priority sites for possible compliance action. Monitoring data is pooled and summarized by CSI and displayed on an updated on Skagit County's web site. In addition to ground level assessment observations and investigation, ECY staff will also join partners with Skagit County PUD and WSDA in conducting at least one aerial flight survey during winter 2023-24. This will be done to better understand the movement of water and pollutants across the landscape during the season when soil is its most saturated and ground water levels at their highest.

Compliance Activities

- **Complaints and Referrals:** BFO staff will typically receive cases from ERTs complaints, through complaints by citizens, or through referrals from our partners.

- **Follow-up from previous years:** BFO Staff typically contact from ten to twenty non-dairy livestock operators from the previous winter, reminding them to take action to avoid discharge violations, and follow up on those contacts as needed. About half of our complaints/referrals each year are from operators we have worked with before.
- **Enforcement:** Although Ecology does not establish targets for enforcement actions, we typically send five to ten warning letters and one to two formal enforcement actions per year. (Notices of Violation, Immediate/Administrative Orders and Notices of Penalty).

Monitoring Activities

- BFO field staff conduct routine sample runs to identify streams or reaches that have high FC concentrations, and collect samples from streams, ditches, and runoff from properties to identify sources of manure-contaminated runoff.
- BFO Staff will collect and have analyze for FC about 50 water samples in the Samish watershed in the next year.

Whatcom Creek

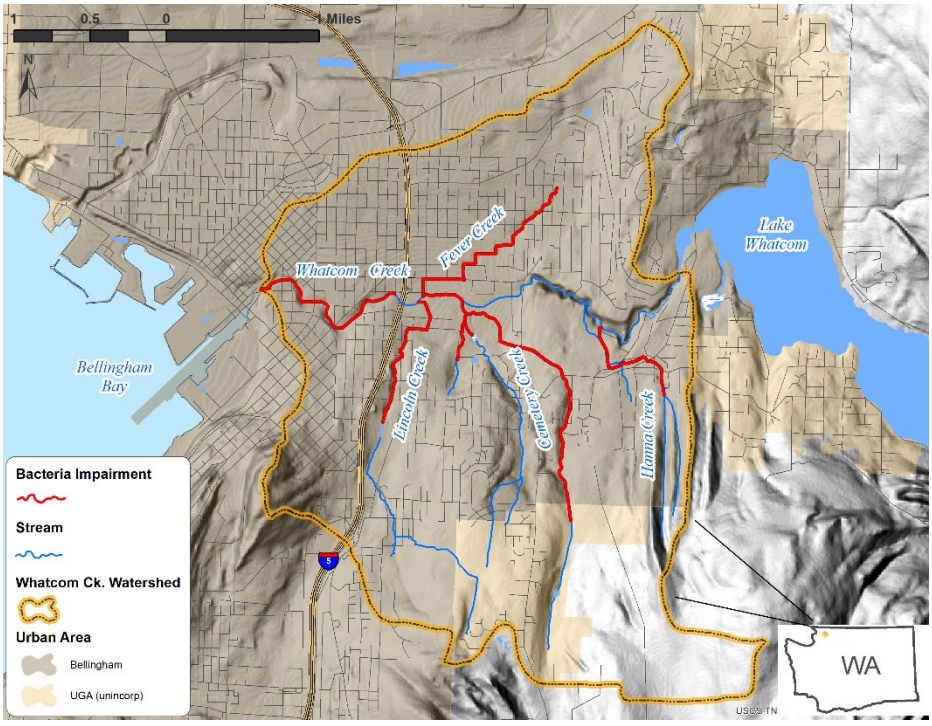

Figure 64. Whatcom Creek watershed with assessment units identified — impaired 303(d) for bacteria.

Implementing: Whatcom Creek proposed bacteria TMDL

Summary/Context Info:

In 2001 the City of Bellingham and Ecology worked together to produce a TMDL technical report for informed implementation (Figure 24). Since 2001, the City of Bellingham water quality monitoring indicates improving water quality trends in many locations throughout the Whatcom Creek watershed. Improving trends are largely attributed to effective actions required by MS4 general stormwater NPDES permit holders. Actions carried out through MS4 permit requirements are the primary mechanisms that reduce bacterial pollution. In 2020, Ecology began collaborating with stakeholders to complete the TMDL Implementation Plan. The TMDL is on EPA's WQ-27 priority list that has been moved to the bridge-metric. The draft TMDL and Implementation Plan shall be out for public comment and submitted to EPA for approval by early-to-mid-2023.

Priority Actions:

Education and Outreach

- **Pet Waste:** The City of Bellingham plans to conduct additional public surveys aimed at pet owners to better understand waste handling practices and prioritize watershed areas with the greatest risk of associated pollution problems.

- **Stormwater Pollution Prevention:** The City will also increase efforts to educate citizens of stormwater related pollution prevention activities.

Financial Assistance

- **Local:** Actions are generally funded through local governmental programs.
- **State and Federal:** Additional funding such as 319, Centennial, and Stormwater Financial Assistance Program grants will be utilized upon EPA approval of the pollution control plan currently in progress.

Partner Coordination

- **Local and State:** Project partners including the City of Bellingham and Whatcom County have reviewed the draft TMDL Implementation Plan and finalized comments in early 2023.
- **State and Federal:** Ecology and the EPA are coordinating the best approach to the Implementation Plan with an approval date no later than 2023.

Pollution Identification/Watershed Evaluating

- **Annual Reporting:** The City of Bellingham identifies and evaluates through the requirements of the MS4 stormwater NPDES permit and Habitat Restoration Program.

Monitoring Activities

- **Urban Stream Monitoring Program:** The City of Bellingham Urban Streams Monitoring Program collects monthly water quality samples throughout the watershed. The Program is popular and favorable to continue.
- **Fecal Coliform and *E. coli*:** The City coordinated additional fecal coliform and *E. coli* sampling for 2021. Paired bacterial indicator sampling builds from the technical TMDL and addresses the change in indicators from fecal coliform to *E. coli* for freshwater contact recreation. Type 2 simple linear regression was used to characterize the relationship between FC and *E. coli* to establish TMDLs in the freshwater reaches of the basin. The FC TMDL was also established at the mouth of Whatcom Creek to protect downstream shellfish harvesting.

Lake Whatcom

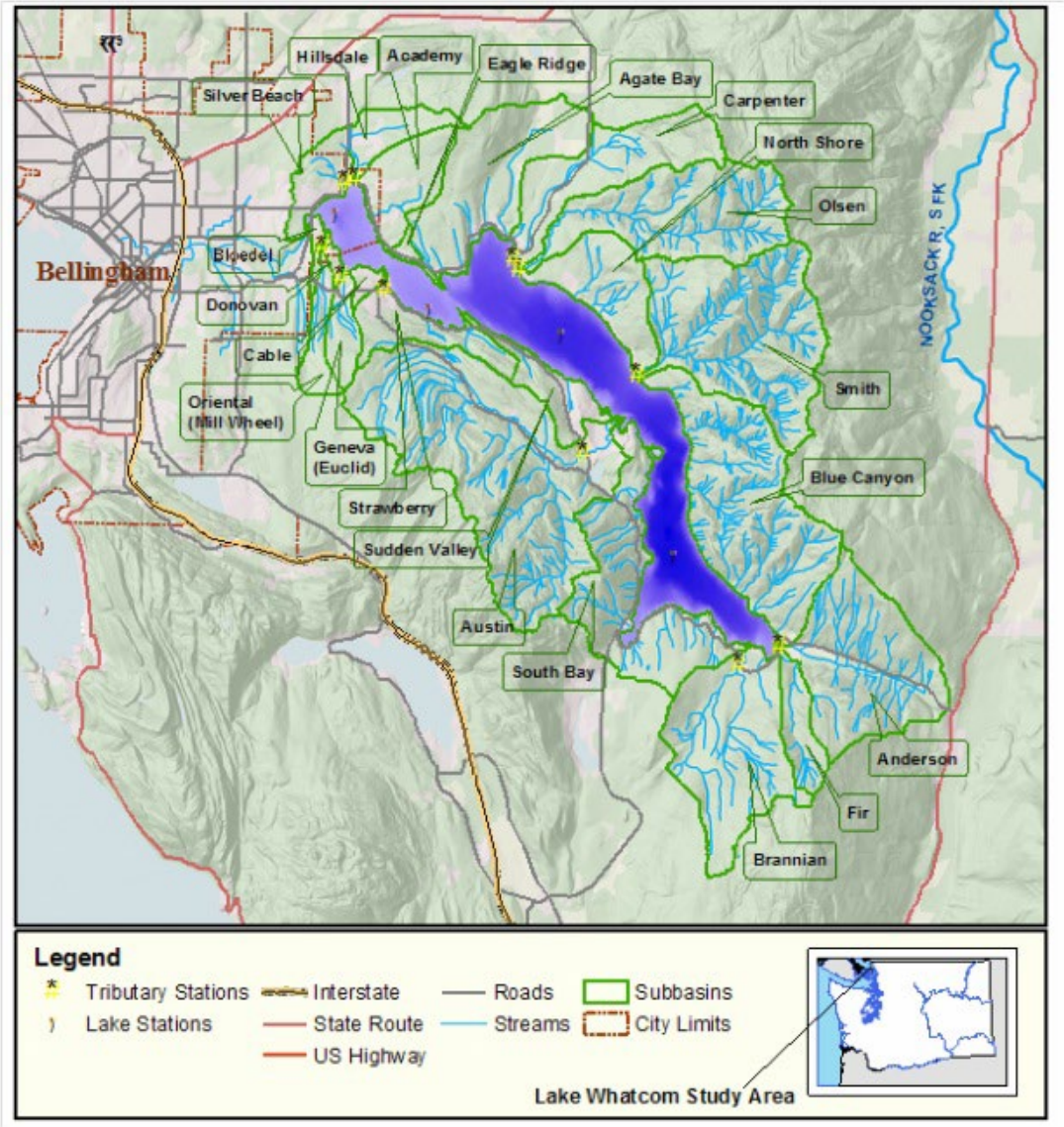

Figure 65. Map of Lake Whatcom watershed and study area.

Implementing: Lake Whatcom multiparameter TMDL

Summary/Context Info:

Lake Whatcom is an important ecological, recreational, and aesthetic resource and the main water supply for more than 100,000 people in Whatcom County (County) and the City of Bellingham (City) (Figure ??). Long-term water quality monitoring in the lake indicated a decline in DO due to elevated phosphorus (P) loading. Bacteria levels in some of the tributaries were also elevated. In the early 2000, Ecology conducted a TMDL addressing DO through P loading, and bacteria. Approximately 12% of the watershed is covered by MS4 permits as a point source, while the remaining 88% is nonpoint-source-related. Most of the nonpoint source is addressed

by the City and County voluntarily extending MS4 permit-related activities or Forest Practices that address timberland management where over 70% of the watershed is zoned for forestry.

The lake response model (CE-QUAL-W2) was used in conjunction with the watershed runoff model to simulate DO in the lake in response to lake processes and nutrient loading from tributary inputs. This TMDL was established based on limited data collected from 2002 through 2003. The TMDL Implementation Plan includes an adaptive management component that refines the model based on new data. Recalculating the P-loading capacity using 17 years of runoff data and 13 years of lake data reduced uncertainty, which may be used to update the wasteload and load allocations based on new modeling results. Findings from the TMDL model update are set to be finalized by 2024.

Priority Actions:

Education and Outreach

- **Pet Waste:** The City and County conducts public surveys aimed at pet owners to better understand waste handling practices and prioritize watershed areas with the greatest risk of associated pollution problems.
- **Stormwater Pollution Prevention:** The City and County continued efforts to educate citizens of stormwater related pollution prevention activities.
- **Homeowners Incentive Program (HIP):** The HIP educates landowners and provides incentives for watershed residence to improve their landscaping and reduce P-runoff. Both the County and the City are proposing changes to the HIP. The City is increasing the reimbursable amounts to track inflation in building supplies. The \$1.30 per ft^2 will be increased to \$1.60. Small vouchers of up to \$250 will be made available for sites that were improved within the past 5 years to offset young plantings that were impacted by drought or freezing conditions. To receive the voucher a signed maintenance agreement will need to be provided. This is a way to reengage with early adopters to the HIP program to support them and to ensure the landscaping is maintained.

Financial Assistance

- **Local:** Actions, contracts, and capital improvement projects are generally funded through City, County, the Lake Whatcom Water and Sewer District fees and taxes. Stormwater improvement projects focus on reducing P and FC loading from stormwater in urbanized. The City and County fund contracts for data collection, modeling, and analysis. Land preservation to restore areas that otherwise may be susceptible to development or other disturbances is a locally funded program. Many of these local funding sources are used to match state and federal funding sources.
- **State and Federal:** The Stormwater Financial Assistance Program grants comprise the greatest portion of state assistance, where many stormwater retrofits and capital improvement projects are completed with partial funding administered by Ecology.

Additional funding such as 319 and Centennial may be utilized for land preservation and other nonpoint-related water quality protection activities.

- **2020 — 2024:** The Lake Whatcom Work Plan describes 10 program areas and outlines a budget of $60,182,668 total funds covering the 5-year span.

Partner Coordination

- **Local and State:** Project partners including the City, County, and the Lake Whatcom Water and Sewer District, conduct at least 12 meetings per year, in which Ecology participates. Additional meetings cover model updates and City and County council meetings including the Interjurisdictional Coordinating Team. Data sharing also comes from Western Washington University Institute for Watershed Studies and private contractors, which are contracted by the City and County. Ecology and the Department of Natural Resources participated in a few meetings regarding the model update and forest practices.

Pollution Identification/Watershed Evaluating

- **Annual Reporting:** The City and County provide annual reports under the MS4 permits, which is separate from 319 reporting. Watershed evaluations, however, are conducted beyond the permitted MS4 area to prioritize capital improvement and retrofit stormwater projects and land preservation areas.

Monitoring Activities

- **Data collection and reporting:** The Western Washington University Institute for Watershed Studies conducts lake and stream sampling at least once a month with results and discussion published annually. This activity is contracted by the City. The County contracts monitoring activities with a focus to address data gaps such as bio-marker studies, concentrated tributary studies, and stormwater studies. Contractors are nearing the completion of the TMDL model update that incorporates data from the Institute for Watershed Studies, contractors, the City and other governmental organizations.

South Fork Nooksack River

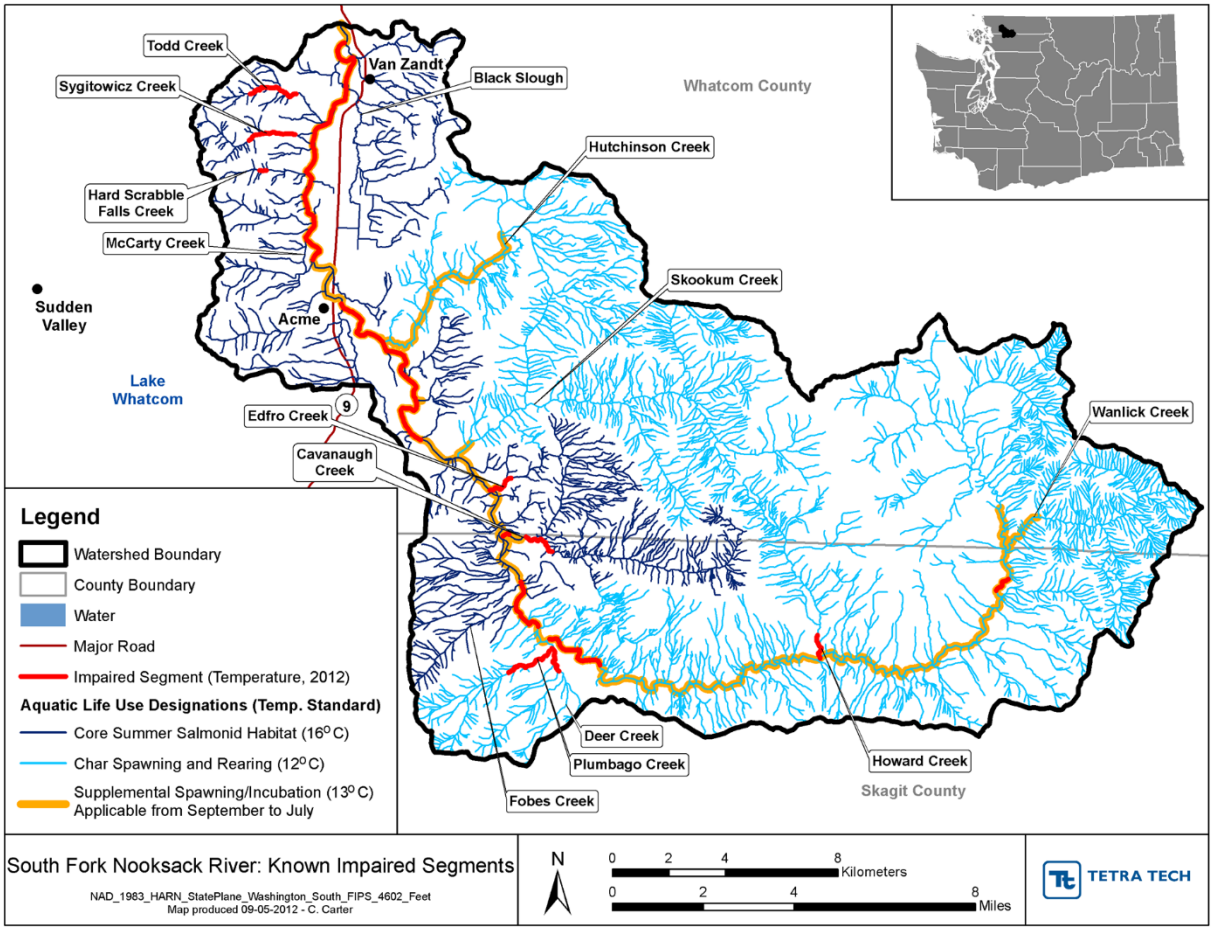

Figure 66. Map of the South Fork Nooksack River temperature TMDL study area

Implementing: South Fork Nooksack River temperature TMDL

Summary/Context Info:

The 2012 water quality assessment by the Ecology determined that portions of the South Fork Nooksack River (SFNR) and some of its tributaries had temperature levels greater than what Washington State allows in its fresh waters (some of these portions were determined to be impaired during prior assessments in 1996 and 1998). High water temperatures are detrimental to fish and other native species that depend on cool, clean, well-oxygenated water. Climate change is predicted to exacerbate these high temperatures. To address this issue, Ecology, Nooksack Indian Tribe, the Lummi Nation, and the EPA cooperated on development of a temperature TMDL for the SFNR. The water quality improvement report contains the study, along with recommendations for restoring the water body, and an implementation plan that lays out roles and responsibilities and potential funding sources for this process.

Nooksack River early run (a.k.a. spring Chinook salmon) Chinook, bull trout, and steelhead populations comprise components of the Puget Sound Chinook Evolutionarily Significant Unit (ESU), Puget Sound Steelhead ESU, and Coastal-Puget Sound Distinct Population Segment (DPS), all of which are listed as threatened under the federal Endangered Species Act (ESA). Improving water quality in the SFNR watershed is necessary to support the recovery of threatened cold water fish species that migrate, spawn, rear, or live there.

Priority Actions:

Financial Assistance

- **Tribes:** The Nooksack Tribe and Lummi allocate resources toward monitoring and implementation, which shares both TMDL CWA implementation goals and WRIA Salmonid Recovery Plan efforts.
- **State and federal:** This ongoing work is funded through EPA CWA sections 106 and 319, and Indian General Assistance Grant (IGAP) grant programs that constitute a component of the Nooksack Indian Tribe's Performance Partnership Grant with EPA.

Partner Coordination

- **Tribes:** Nooksack Tribes and Lummi Nation lead river restoration activities**.**
- **Local:** Whatcom County (regulatory authority): enforcement of Critical Areas and Shoreline Master Program regulations. Skagit County (regulatory authority): enforcement of Critical Areas and Shoreline Master Program regulations.
- **State**: Washington Department of Natural Resources (DNR) directs and enforces forest practices regulations. Ecology provides technical assistance, project development and coordination, Centennial Grant funding, State Revolving Fund Loan program, wetlands protection, regulation of NPDES permitted discharges, and when necessary, enforcement of water quality laws.
- **Federal:** EPA provides technical assistance and regulation of NPDES permitted discharges, CWA oversight. The U.S. Forest Service provides technical assistance and management of forest service lands. The U.S. Fish and Wildlife Service participates in WRIA 1 Salmonid Recovery Plan. The WDFW and NOAA participant in WRIA 1 Salmonid Recovery Plan activities.

Pollution Identification/Watershed Evaluating

- **Annual Reporting:** TBD

Monitoring Activities

- **The Natural Resources Department of the Nooksack Indian Tribe** has a program to monitor summer and year-round water temperatures in Chinook salmon habitats of the Nooksack River watershed.
- **Lummi Natural Resources** collect habitat improvement data.

- **Ecology** collects ambient data through the annual basin station planning process.

Appendix C. Maintenance of Effort (MOE) List for State Fiscal Year 2022 per CWA Section 319(h)(9)

Statement of Maintenance of Effort (MOE) related to Section 319(h)

MOE Base Level: Based on available Ecology data from 1985 and 1986, the average level of annual pass-through awards for nonpoint source control projects focused on improving water quality was $480,254. Projects were funded using state Referendum 39 funds.

MOE Maintenance: Ongoing pass-through funding for nonpoint source projects focused on restoration and protection of water quality has far exceeded the MOE Base Level, mostly through resources provided through the Washington State Centennial Clean Water Fund and the Clean Water State Revolving Fund (CWSRF).

Between 1988 and 2021 Ecology has awarded an average of more than $4 million per year in state nonpoint source project funding. These funds were not used as Section 319 or other federal match.

In State Fiscal Year 2022 Ecology offered $4,647,986 in state funds not used as Section 319 or other federal match from our Centennial Grant Program (see below).

Table 16. Final SFY22 Nonpoint Source Projects-Excluding 319 State Match Projects.

ECY Project Number	Recipient Organization	Project Name	Award Amount
WQC-2022-AsotCD-00136	Asotin Conservation District	Asotin County Water Quality Enhancement Project	$250,000
WQC-2022-CascCD-00016	Cascadia Conservation District	Upper Wenatchee Restoration and Education Program	$250,000
WQC-2022-Ilwaco-00152	Ilwaco city of	Bear Ridge Community Forest Watershed Protection Project	$500,000
WQC-2022-KCWLRD-00069	King County - Water and Land Resources Division	Cemetery Pond Wetland Protection and Restoration	$500,000
WQC-2022-LuInBC-00079	Lummi Indian Business Council	Lower Fobes Phase 2 Restoration Project, South Fork Nooksack River	$490,208
WQC-2022-NoYaCD-00105	North Yakima Conservation District	Naches River Water Quality Restoration Project Phase 3	$240,786
WQC-2022-OkanCD-00064	Okanogan Conservation District	After the Burn: Protecting surface water from post-fire pollution	$209,960
WQC-2022-PaloCD-00081	Palouse Conservation District	Supporting Sustainable Ranching on Snake River Tributaries	$500,000
WQC-2022-PaloCD-00095	Palouse Conservation District	Do the Residue! Promoting Direct Seed Operations on the Palouse	$500,000
WQC-2022-PiCoPW-00035	Pierce County - Public Works and Utility Department	Rody Creek Channel Stabilization (Between 80th and 72nd ST E)	$500,000
WQC-2022-TPCoHD-00082	Tacoma - Pierce County Health Department	Minter Bay Water Quality Project	$158,946

WQC-2022-Tumwat-00092	Tumwater city of	Pioneer Park Restoration	$338,086
WQC-2022-WhitCD-00148	Whitman Conservation District	Water Quality Enhancement through Restoration of Function	$210,000
Total			$4,647,986